

Scientific illustration techniques

Spring workshop 2017 – Vienna

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Software

Commercial:

- Adobe Photoshop



- Adobe Illustrator



- Adobe InDesign



Alternatives:

- [GIMP](#)



- [Inkscape](#)



- [Scribus](#)



Uses



- Adobe Photoshop
 - Raster images
 - Cleaning up photos
 - Photo illustrations



- Adobe Illustrator
 - Vector illustrations
 - Digitalization of illustrations
 - Habitus outline
 - Structural drawing
 - Posters



- Adobe InDesign
 - Desktop publishing
 - Posters
 - Layout

Raster

Editing pixels

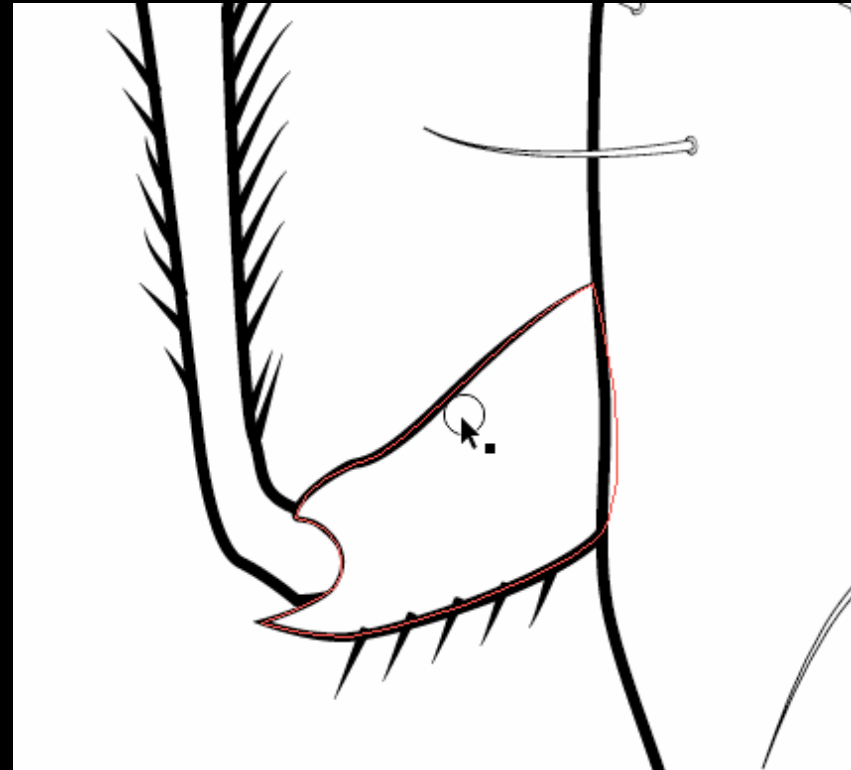
Destructive



Vector

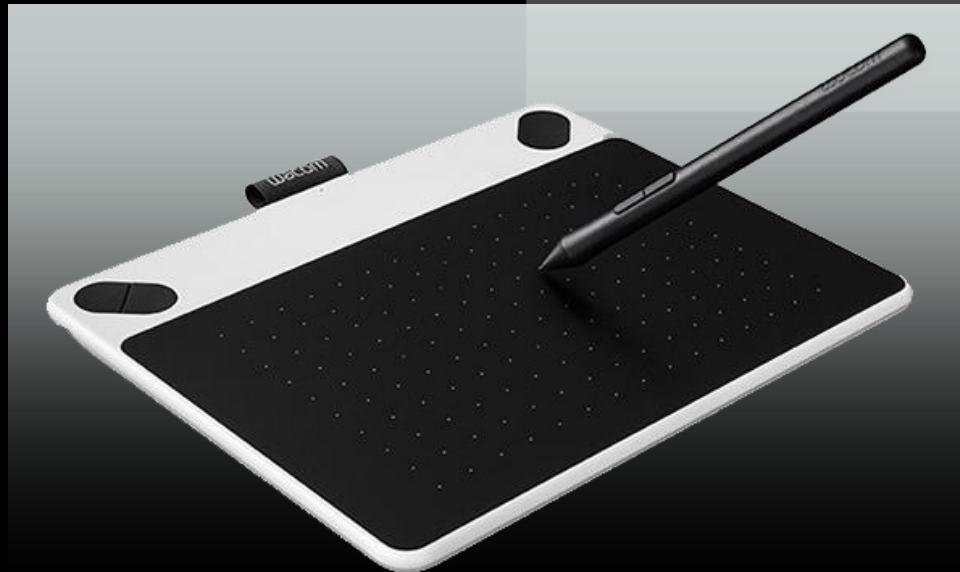
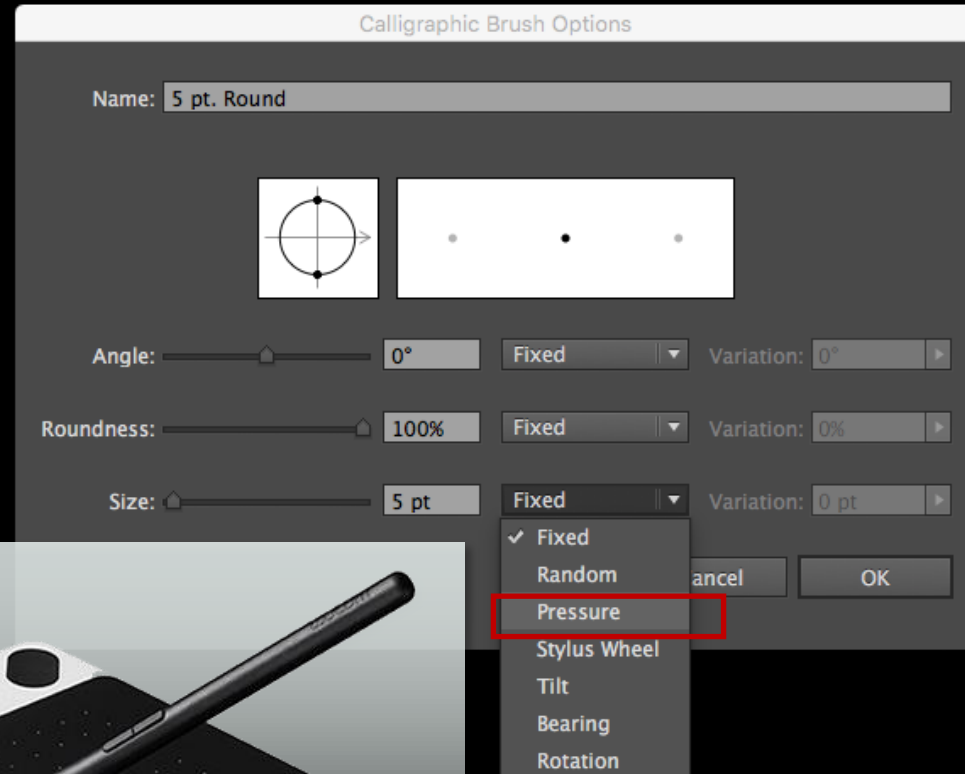
Editing Paths

Non-destructive



Other tools

- Mouse
- Touchpad
- Pen tablet
 - Pressure





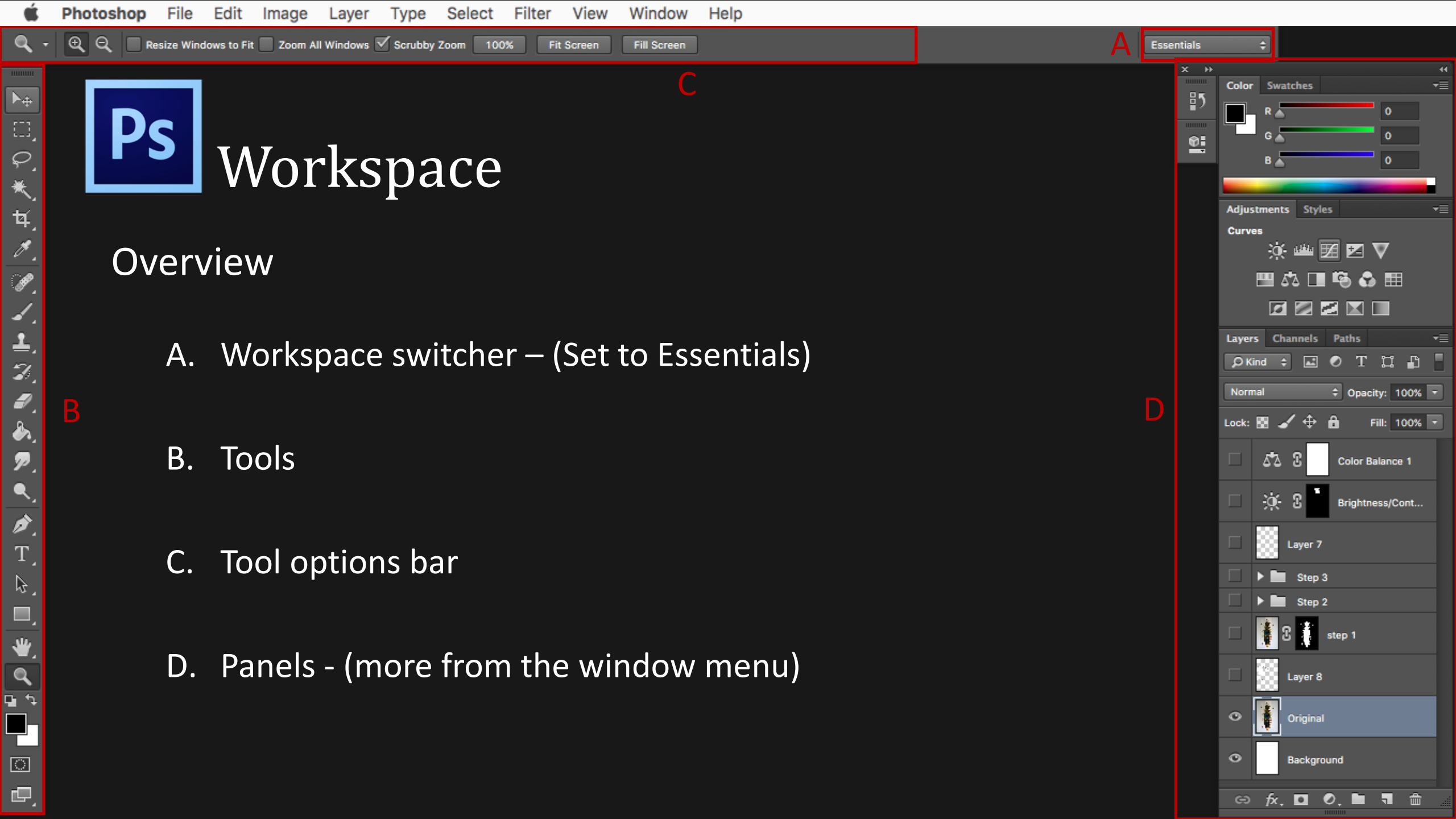
Adobe Photoshop

Image Clean-up



Fossil reconstruction





Ps Workspace

Overview

A. Workspace switcher – (Set to Essentials)

B. Tools

C. Tool options bar

D. Panels - (more from the window menu)

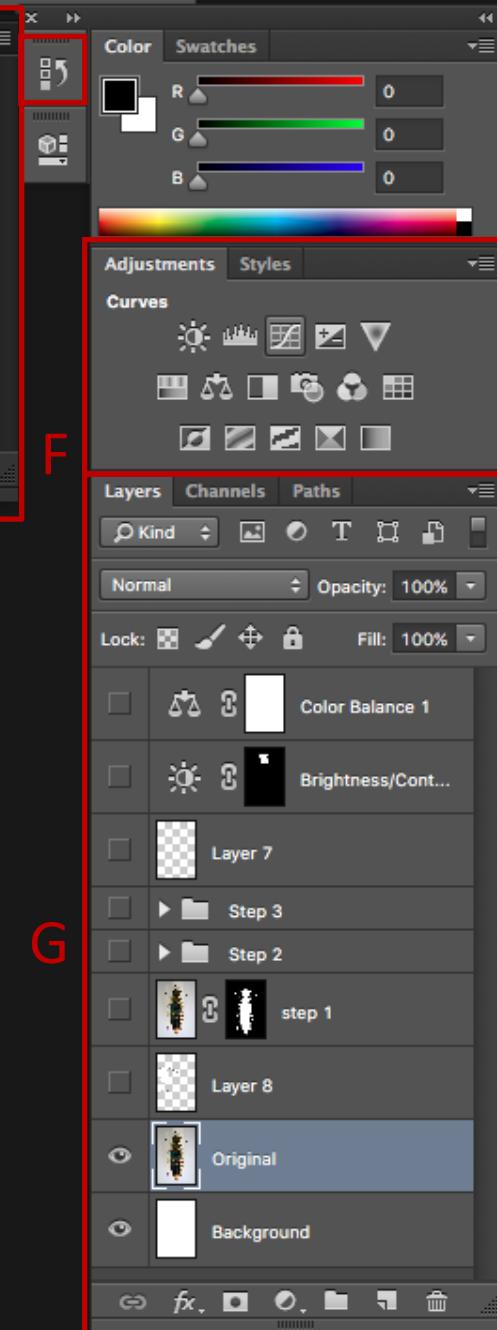
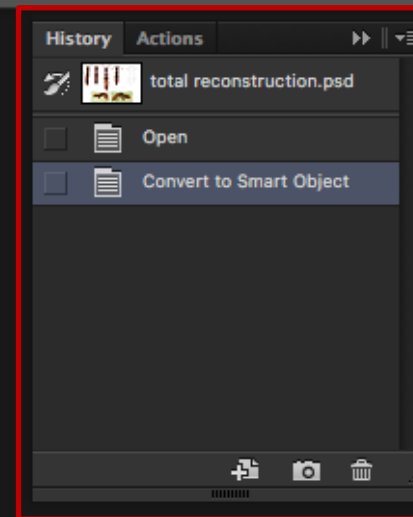
Ps Workspace

Overview

E. History

F. Adjustment layers

G. Layers





Workspace

More panels and
options from window
menu

- Arrange ▶
- Workspace ▶
- Extensions ▶
- Actions ⌘ F9
- Adjustments F5
- Brush
- Brush Presets
- Channels
- Character
- Character Styles
- Clone Source
- Color F6
- Histogram
- History
- Info F8
- Layer Comps
- Layers F7
- Navigator
- Notes
- Paragraph
- Paragraph Styles
- Paths
- Properties
- Styles
- Swatches
- Timeline
- Tool Presets
- ✓ Application Frame
- ✓ Options
- ✓ Tools
- Untitled-1
- Untitled-2
- Untitled-3
- Untitled-4 @ 100% (RGB/8)
- ✓ Untitled-4 @ 100% (RGB/8)

- Tile All Vertically
- Tile All Horizontally
- 2-up Horizontal
- 2-up Vertical
- 3-up Horizontal
- 3-up Vertical
- 3-up Stacked
- 4-up
- 6-up
- Consolidate All to Tabs
- Cascade
- Tile
- Float in Window
- Float All in Windows
- Match Zoom
- Match Location
- Match Rotation
- Match All
- New Window for Untitled-4
- Minimize ⌘ M
- Bring All to Front

Essentials

Color Swatches

Color

R 0

G 0

B 0

Adjustments Styles

Curves

Layers Channels Paths

Kind

Normal Opacity: 100%

Lock: Fill: 100%

Color Balance 1

Brightness/Contrast

Layer 7

Step 3

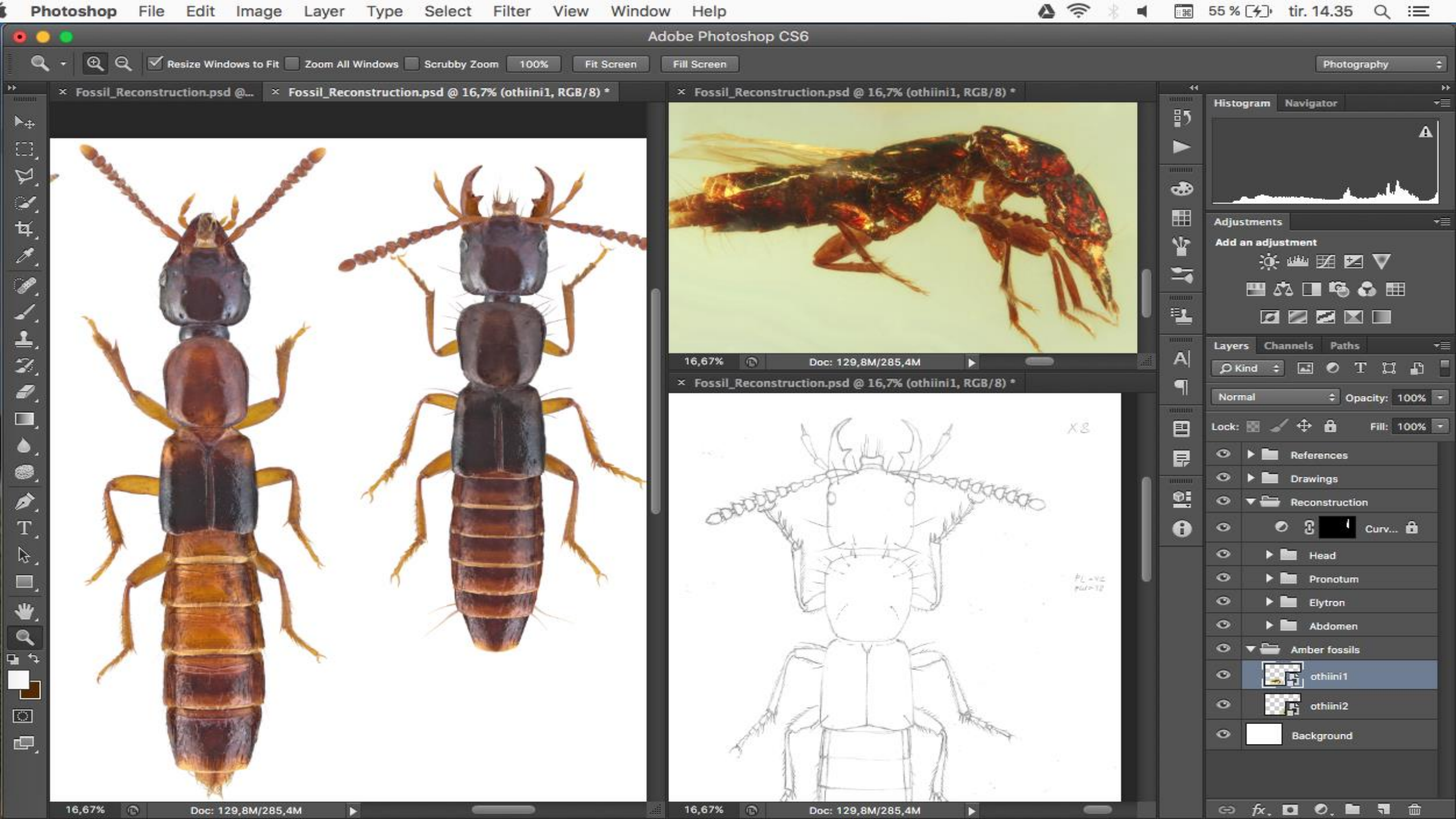
Step 2

step 1

Layer 8

Original

Background





Before Photoshop

Good



Bad



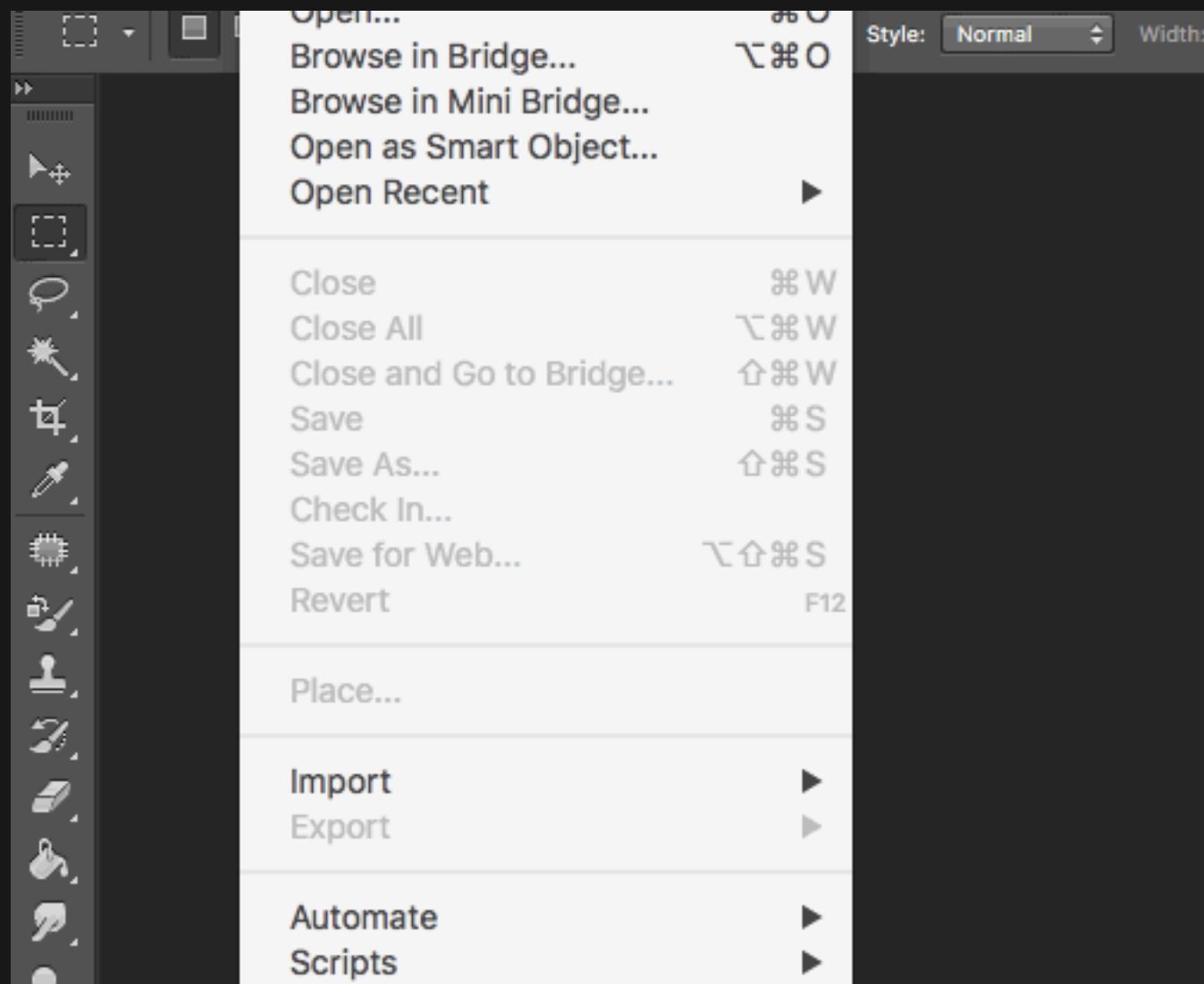
Ugly





Basics

- File > New
- Place
- File > Save As





Keyboard shortcuts – use them!



PC: alt ctrl
Mac: Shift ctrl option cmd



Please note the following keyboard equivalents:

Command (⌘) on Mac = Ctrl on a PC
Option on Mac = Alt on a PC



Basics

- Navigation
 - Hand Tool (H) or use Spacebar
 - Zoom Tool (Z) or ⌘ + scroll up/down
- Basics
 - Foreground/Background colour
 - Screen mode (F) and try Tab

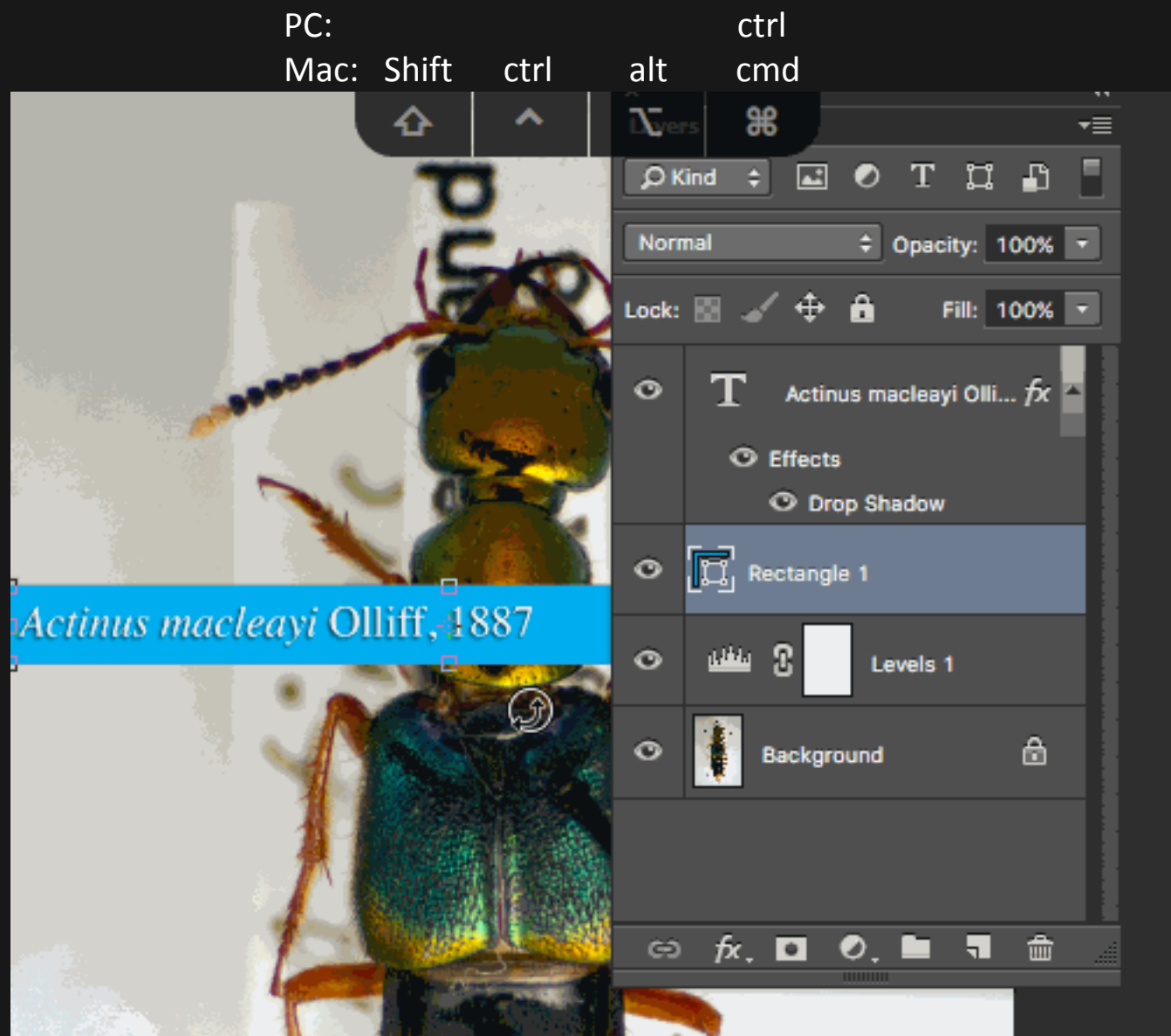
PC: alt ctrl
Mac: Shift ctrl option cmd





Layer basics

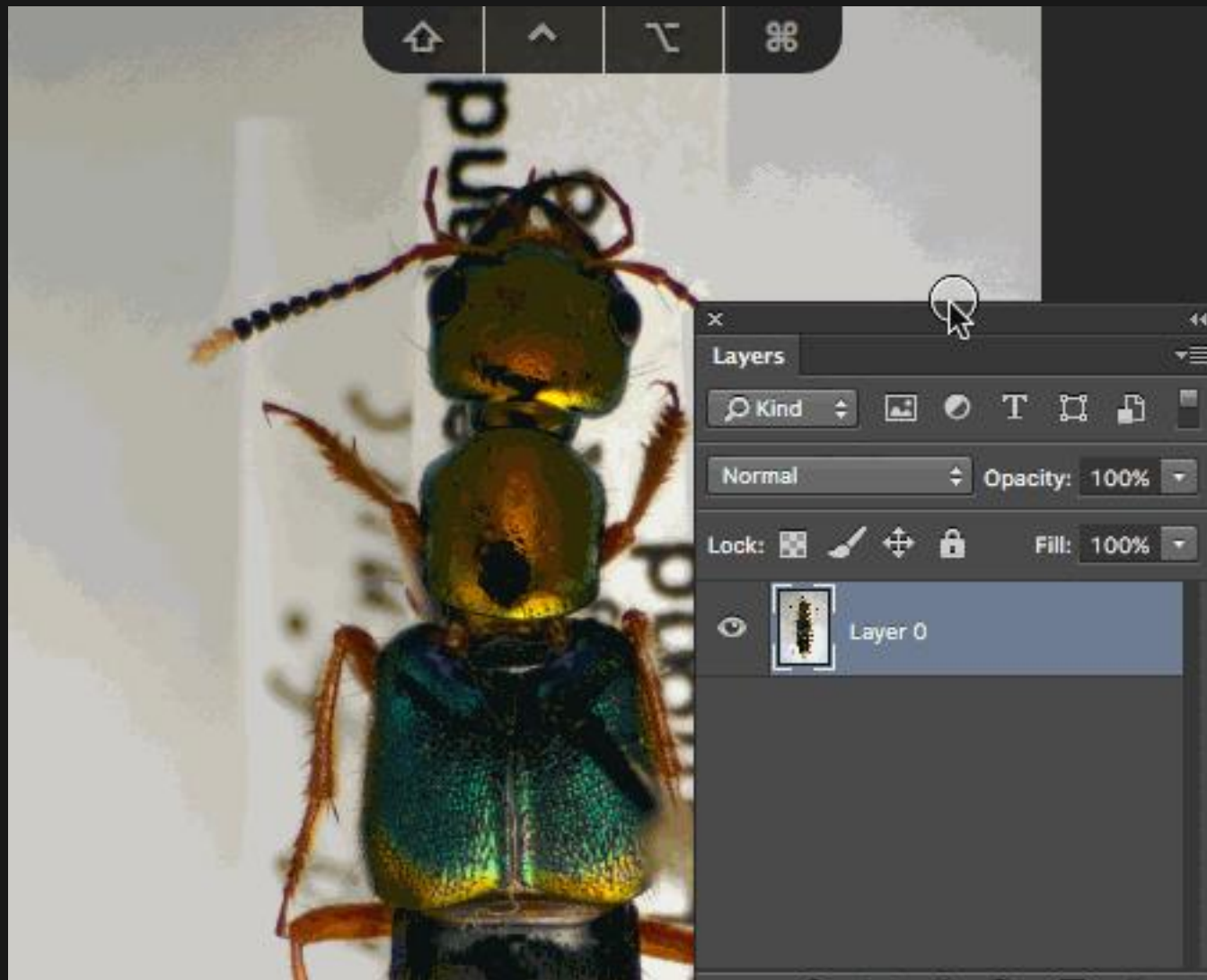
- Arrangement
- Group





Mask

PC: ctrl
Mac: Shift ctrl alt cmd

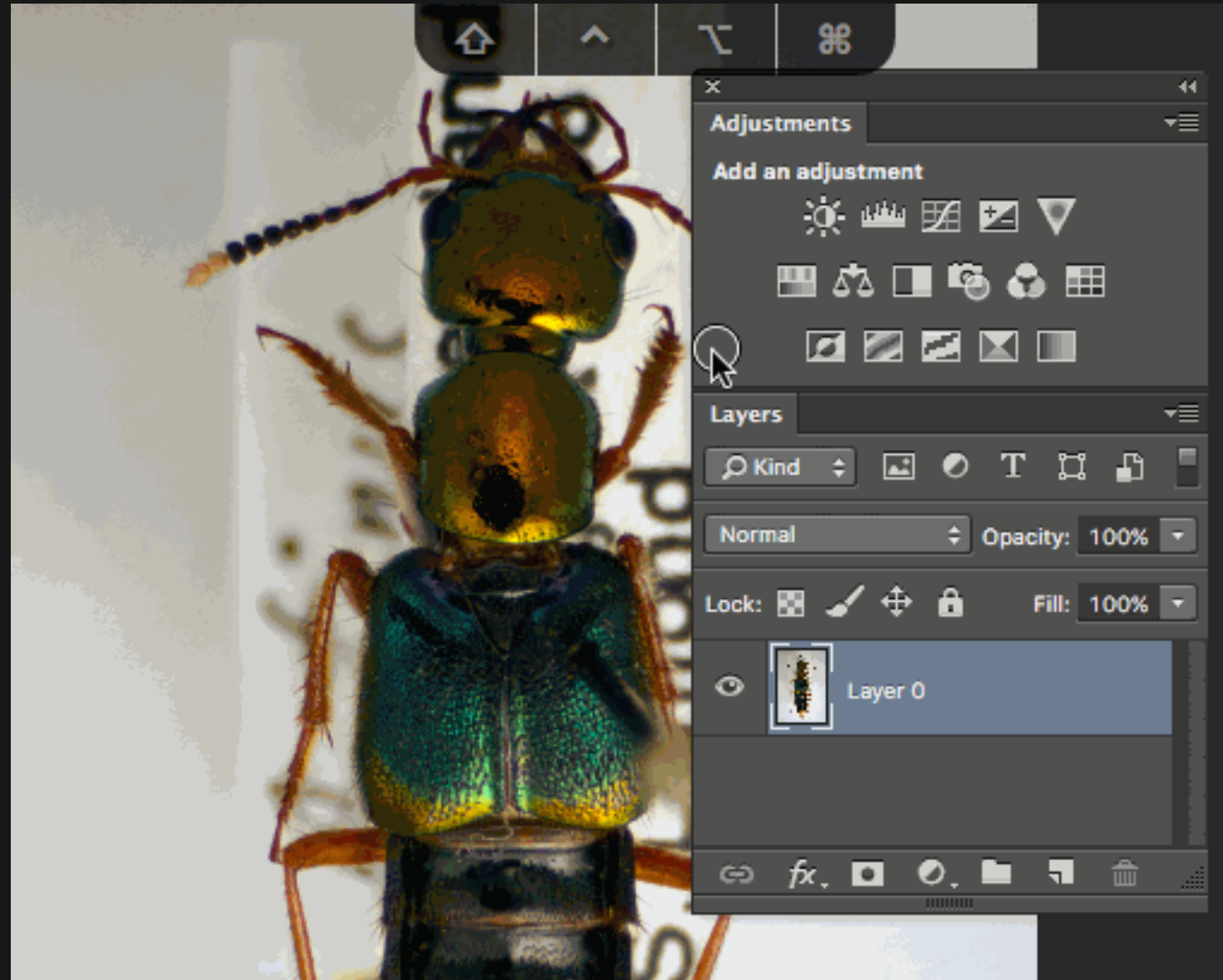




Adjustments

- Non-destructive
- Works as a Layer
- Also use it with Masks

PC: ctrl
Mac: Shift ctrl alt cmd





Tools

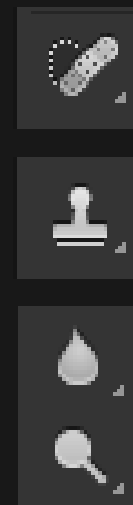
- Select, move and crop

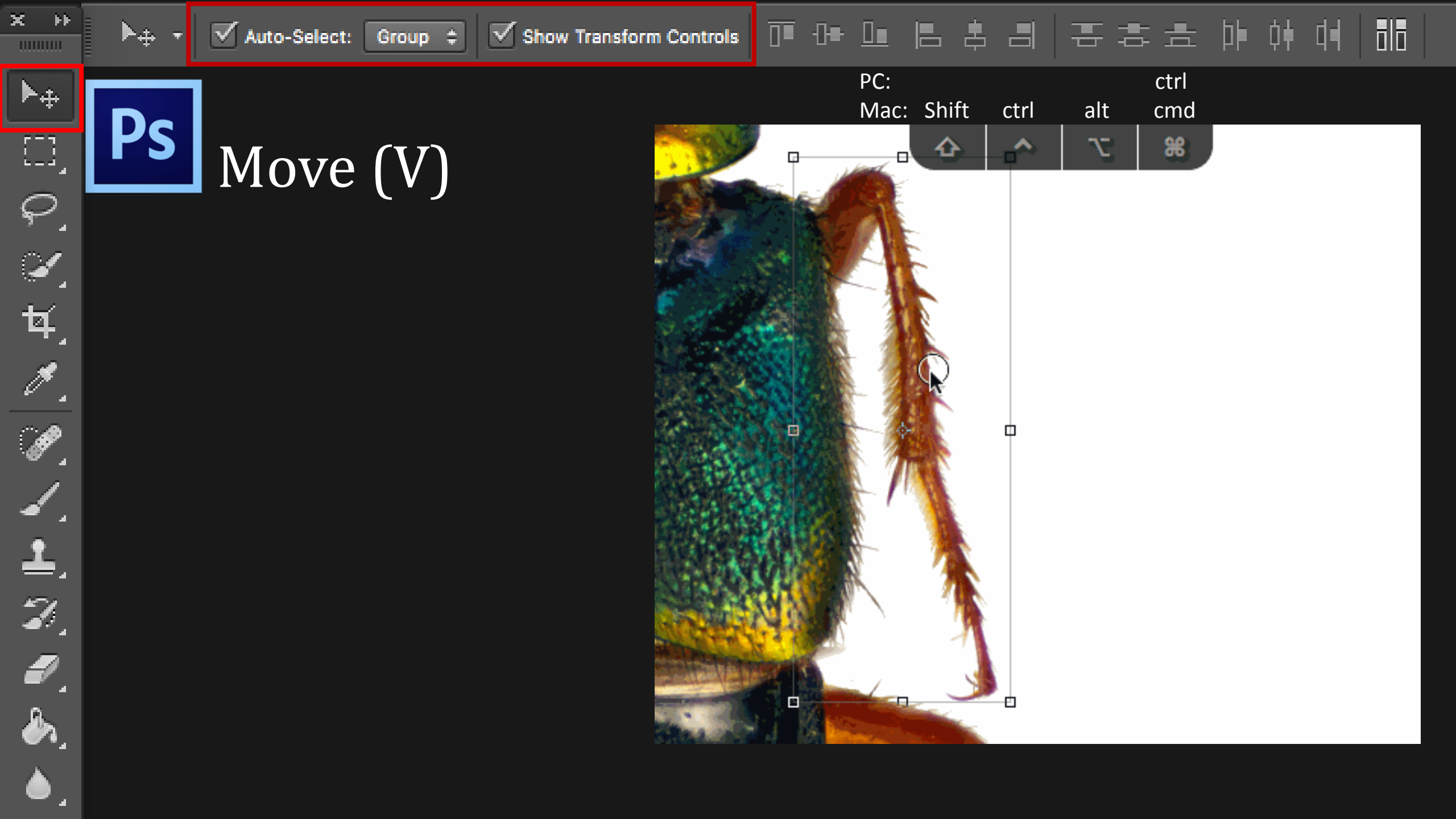
- Move (V)
- Marquee (M)
- Lasso (L)
- Wand selection (W)
- Crop (C)



- Retouch

- Healing Brush (J)
- Clone Stamp (S)
- Blur/Sharpen
- Dodge/Burn (O)







Lasso (L)

- Lasso Tool L
- Polygonal Lasso Tool L
- Magnetic Lasso Tool L

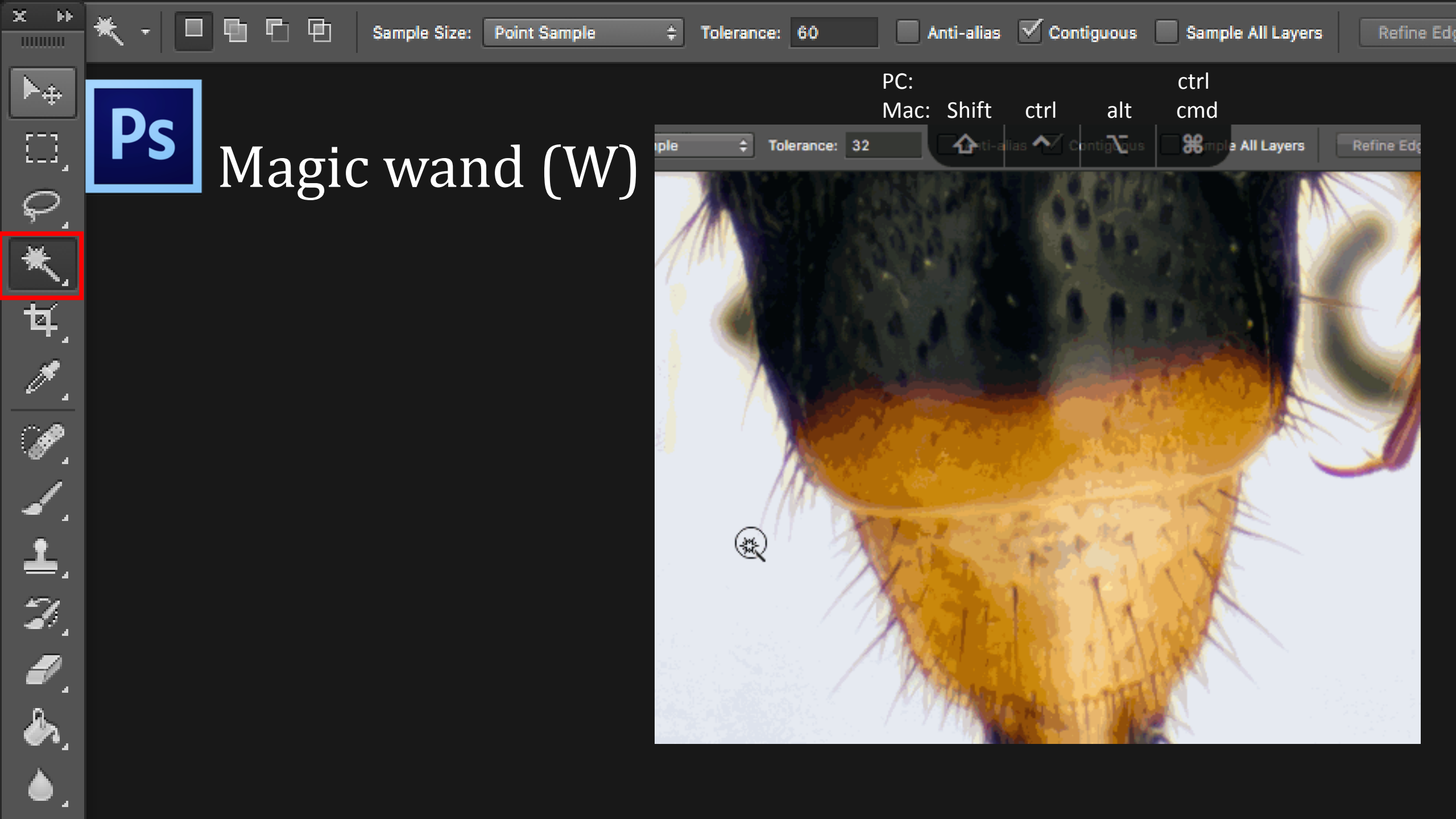
Feather: 0 px

☒ Anti-alias

Refine Edge...

PC: ctrl
Mac: Shift ctrl alt cmd



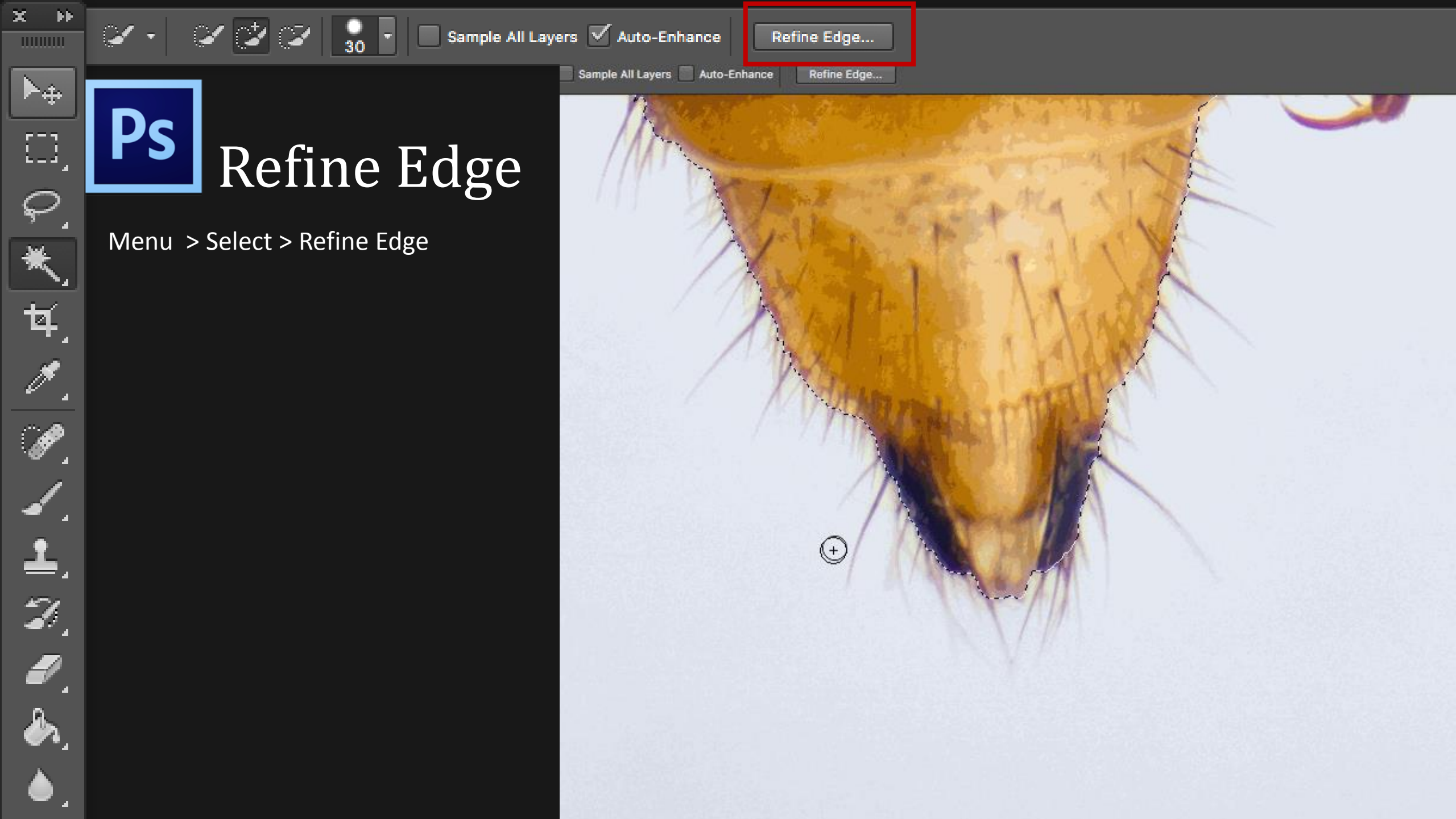


Ps Quick selection



- Quick Selection Tool W
- Magic Wand Tool W





Refine Edge

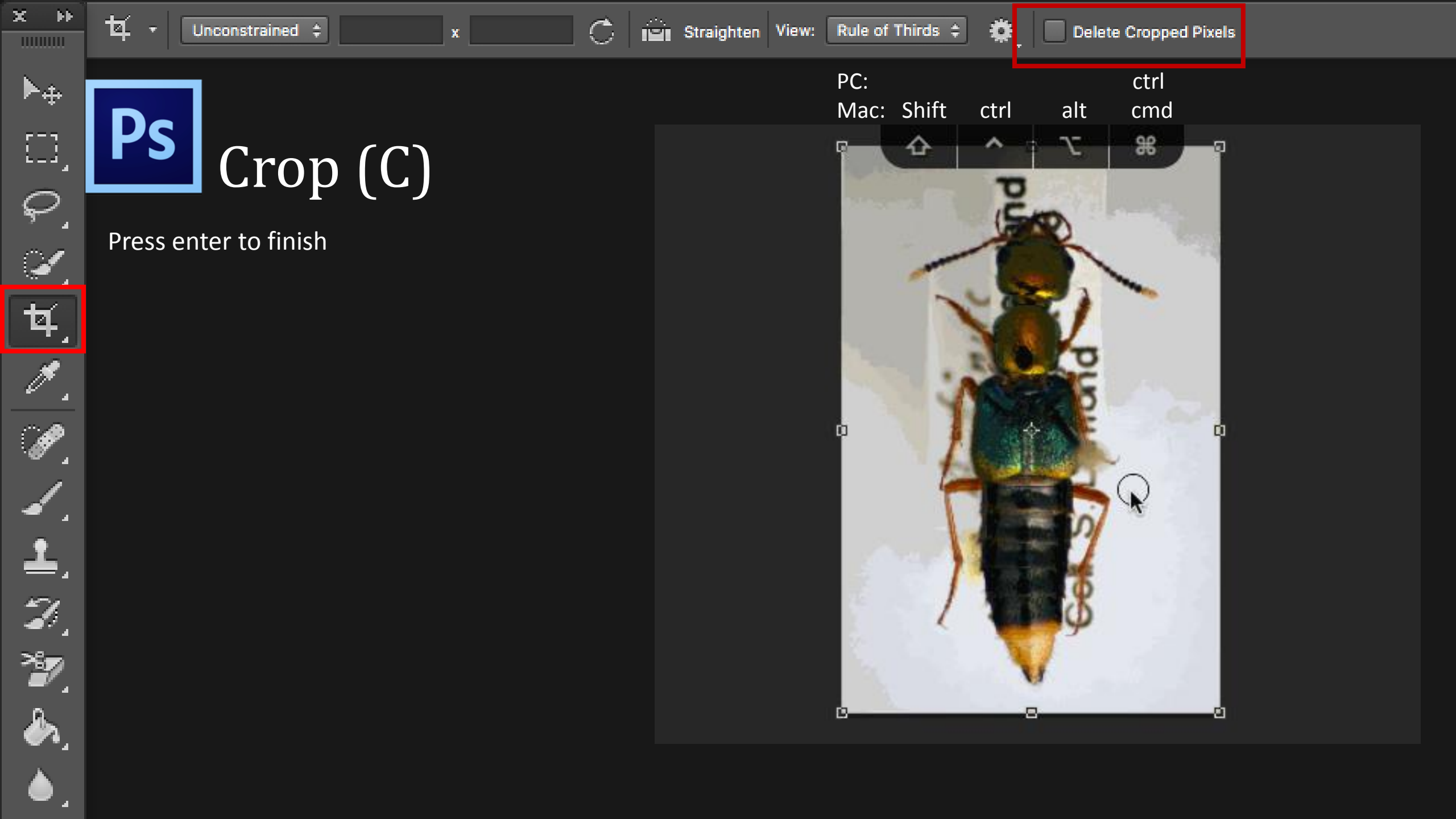
Menu > Select > Refine Edge

Refine Edge...

Sample All Layers

Auto-Enhance

Refine Edge...



Crop (C)

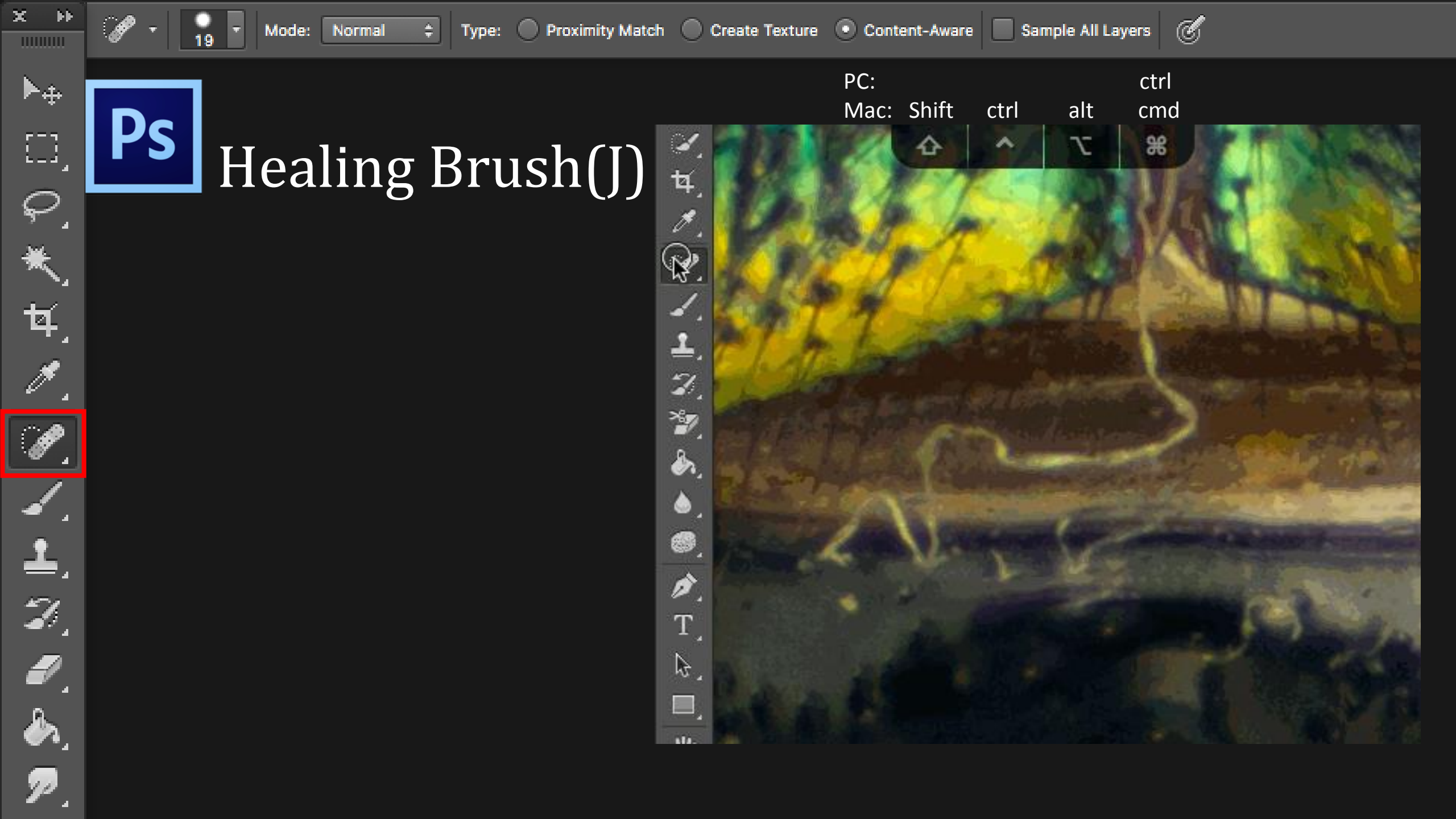
Press enter to finish



PC: ctrl
Mac: Shift ctrl alt cmd

☐ Delete Cropped Pixels





Healing Brush(J)



Tools

- Paint

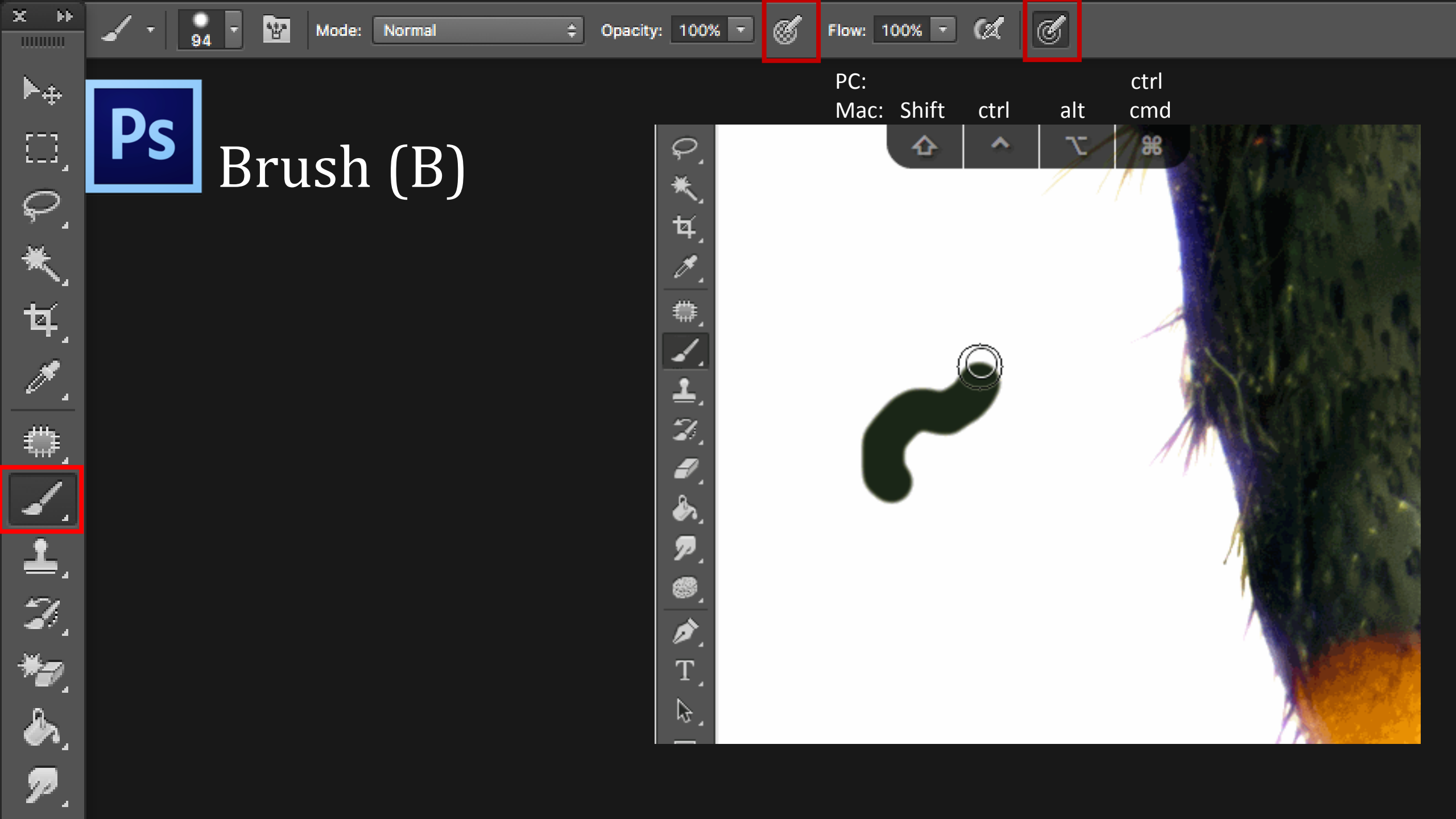
- Brush (B)
- Eraser (E)
- Paint bucket (G)



- Draw and type

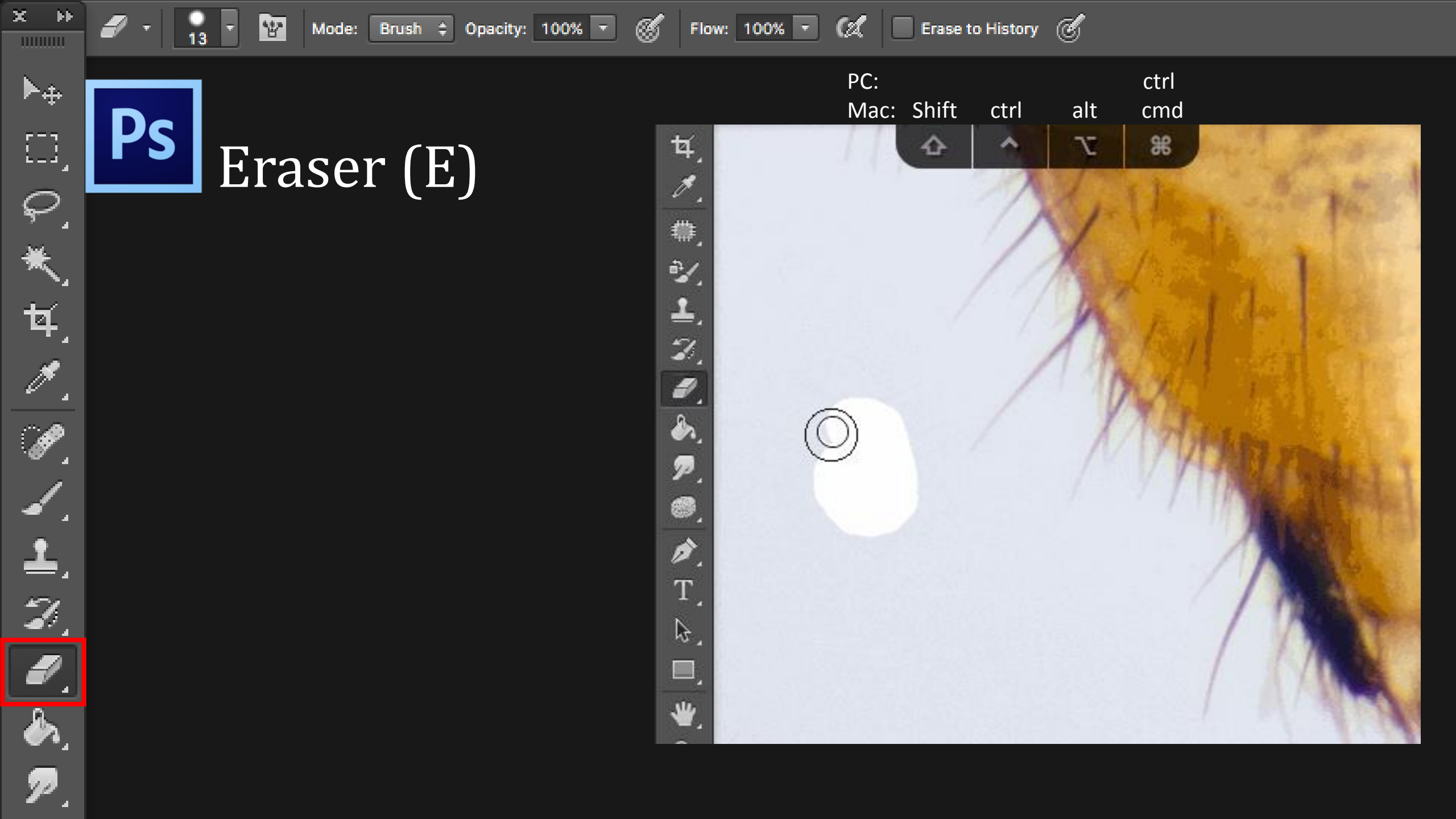
- Pen (P)
- Type (T)
- Rectangle (U)





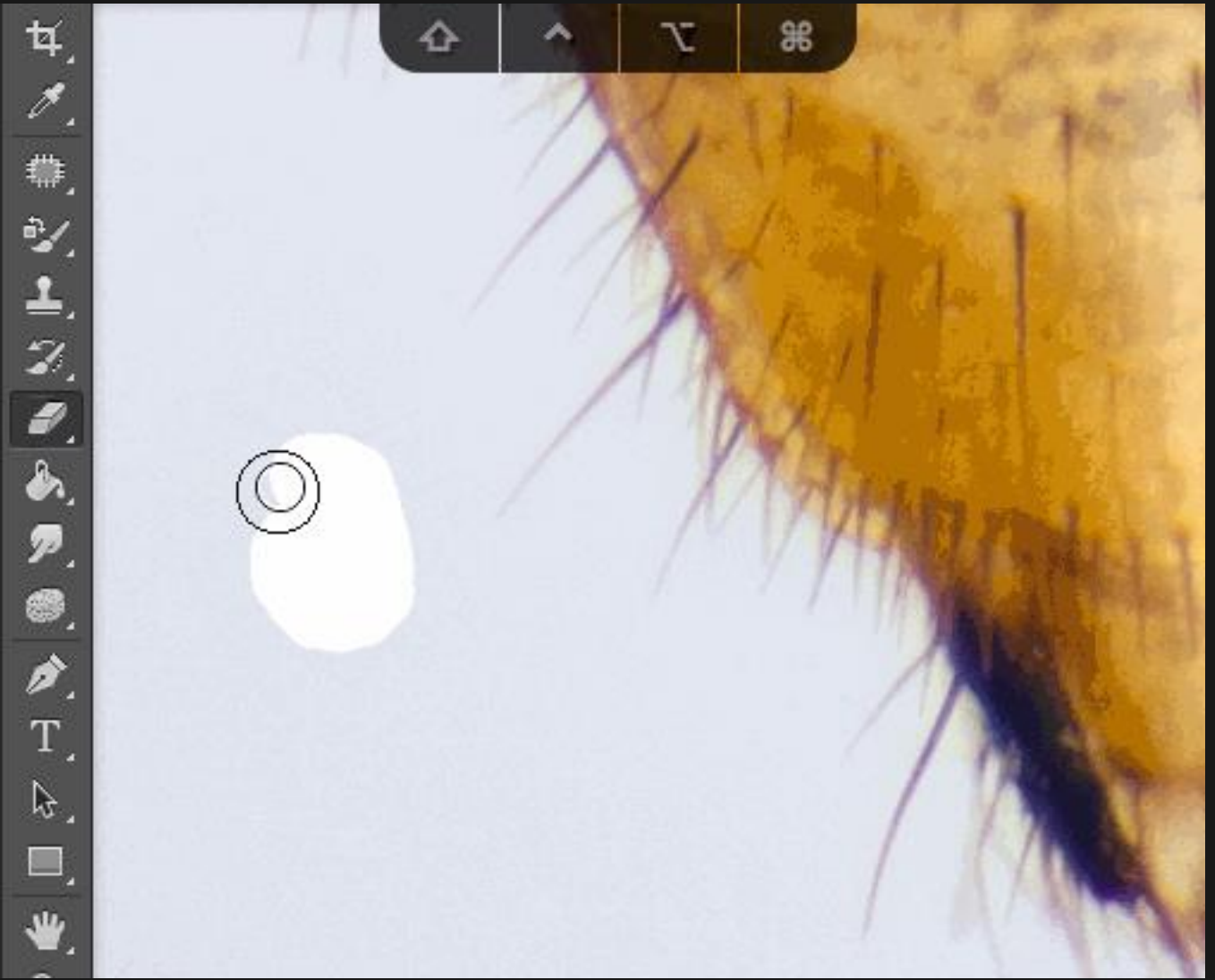
Brush (B)

PC: Mac: Shift ctrl alt ctrl cmd



Eraser (E)

PC: ctrl
Mac: Shift ctrl alt cmd



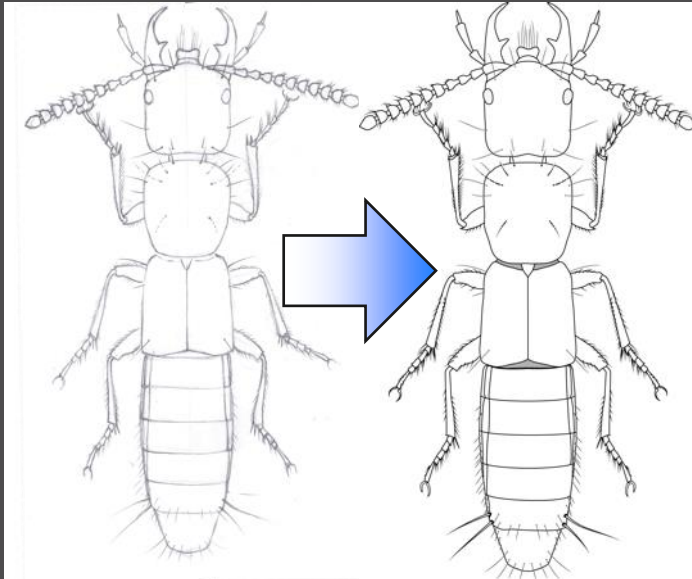
Questions and break

5-10 min

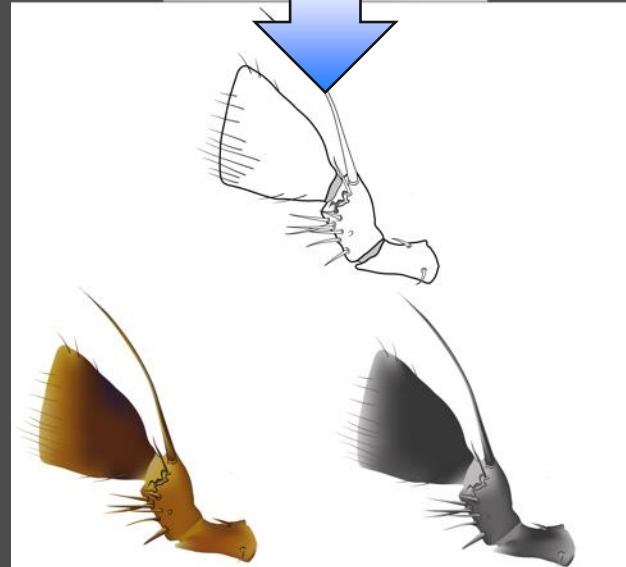
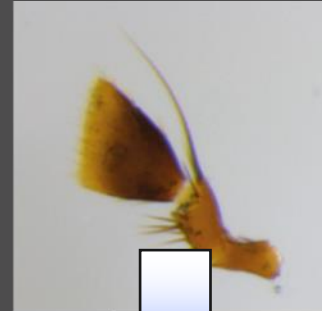


Adobe Illustrator

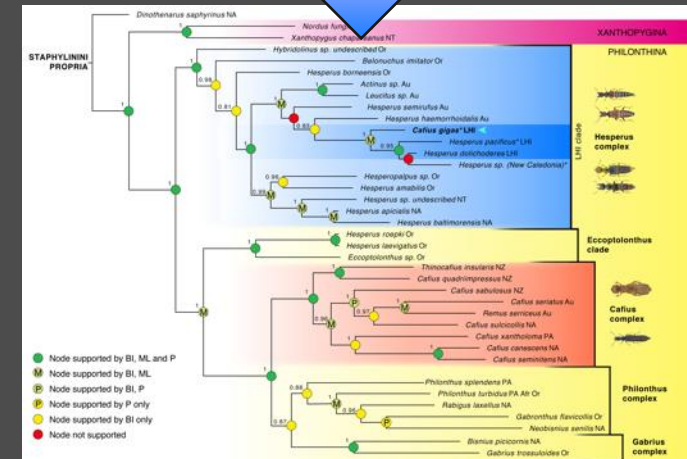
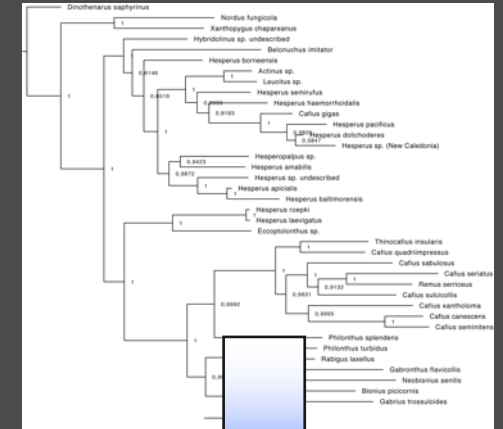
Habitus

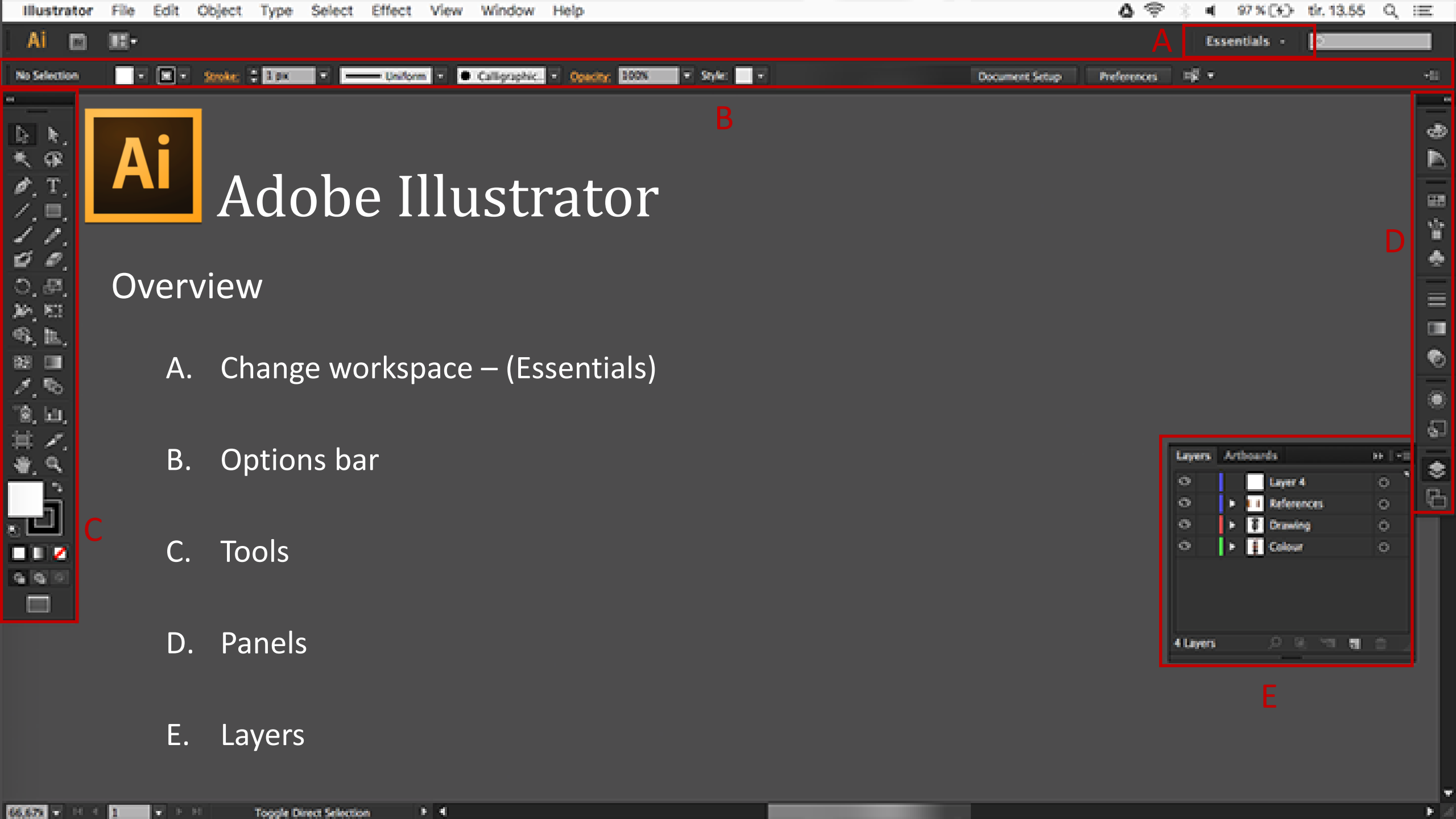


Detail



Tree





A

B

C

D

E

A. Change workspace – (Essentials)

B. Options bar

C. Tools

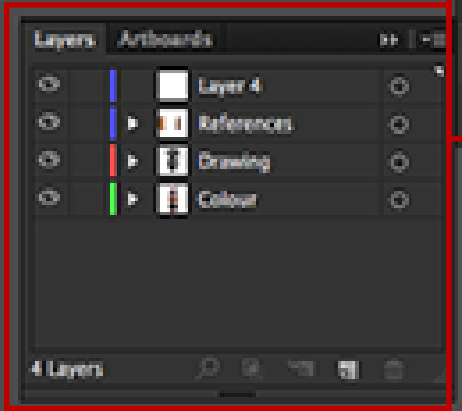
D. Panels

E. Layers



Adobe Illustrator

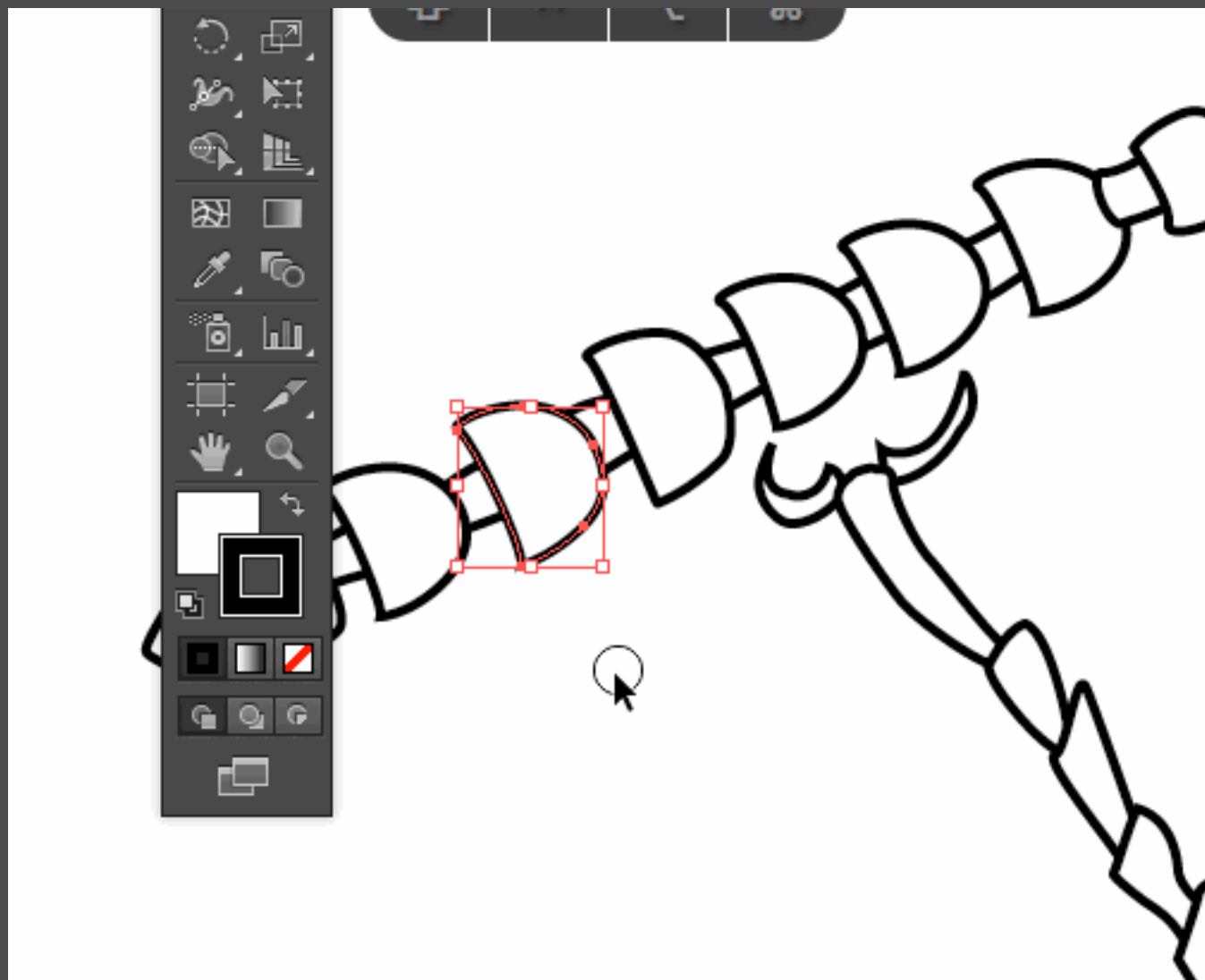
Overview





Basics

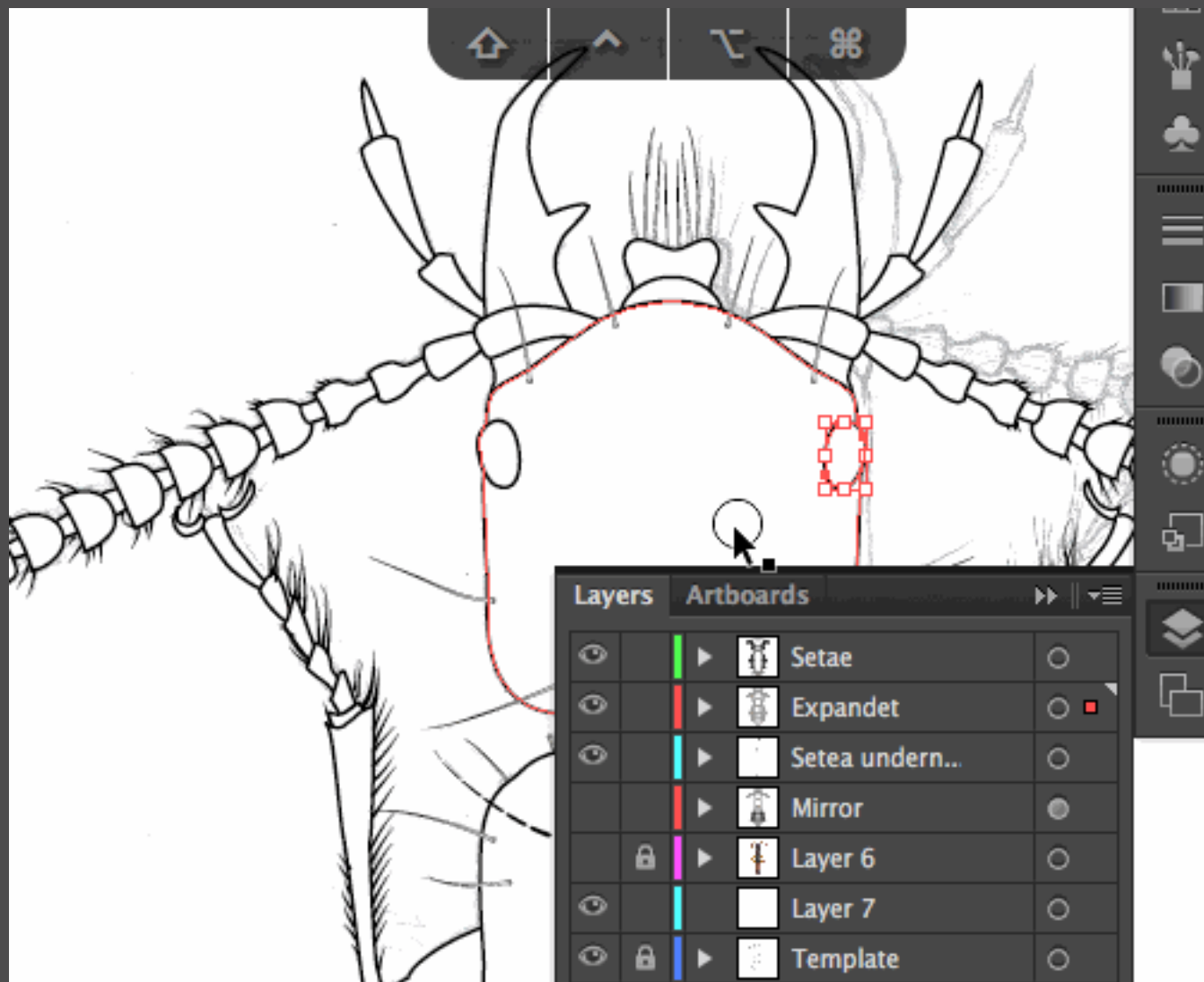
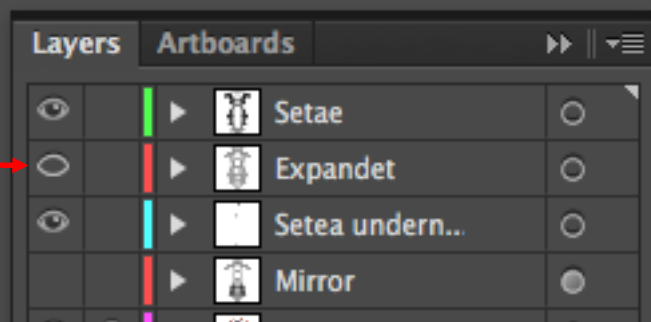
•





Layers

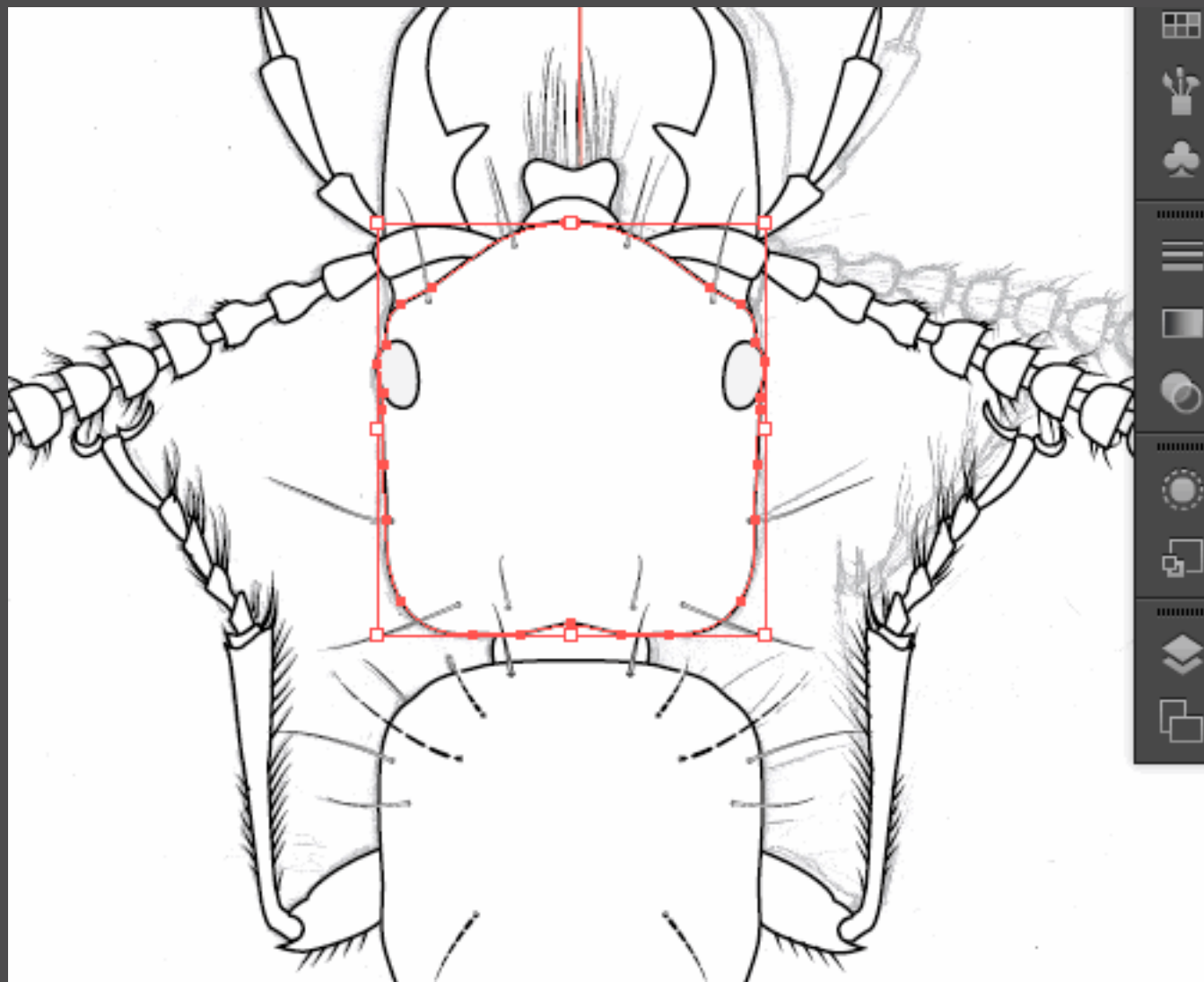
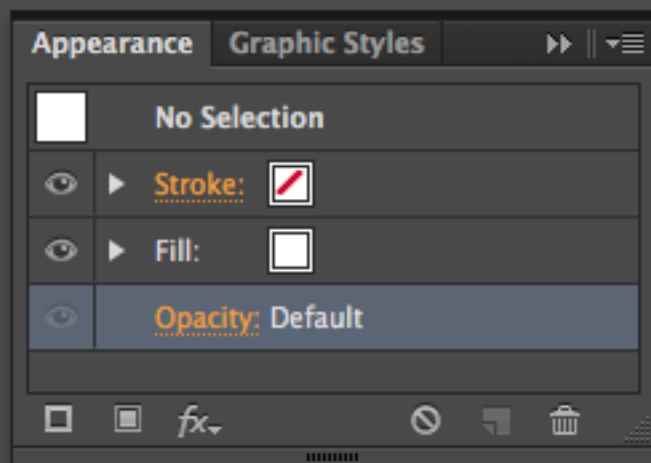
- File > Place Template
- Outline view
Cmd ⌘ click the eye





Appearance

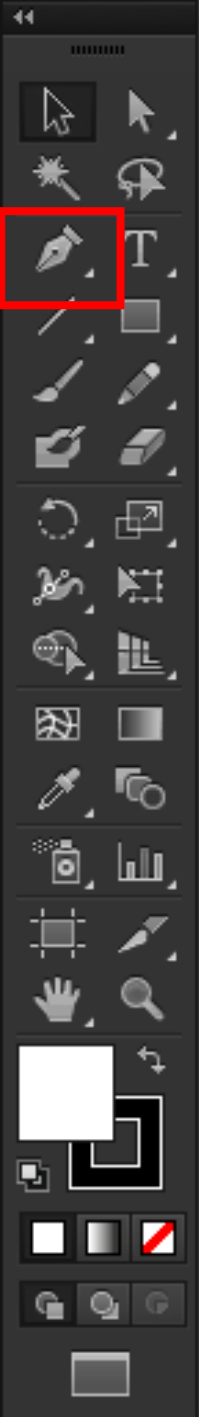
- Similar to PS layer settings
- Opacity
- Blend mode
- Effects





Tools

- Draw
 - Pen (P)
 - Pencil (N)
 - Eraser (Shift+E)
- Selection
 - Direct selection (A)
 - Magic Wand (Y)
 - Lasso (Q)

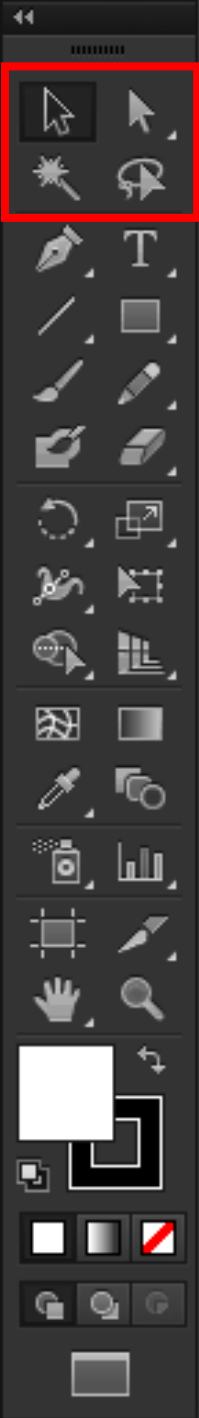


Pen (P)

- Bézier curves and anchor points
- Hold Space while drawing to move the point
- Enter to finish the path
- Shift+cmd+A to deselect

PC: ctrl
Mac: Shift ctrl alt cmd

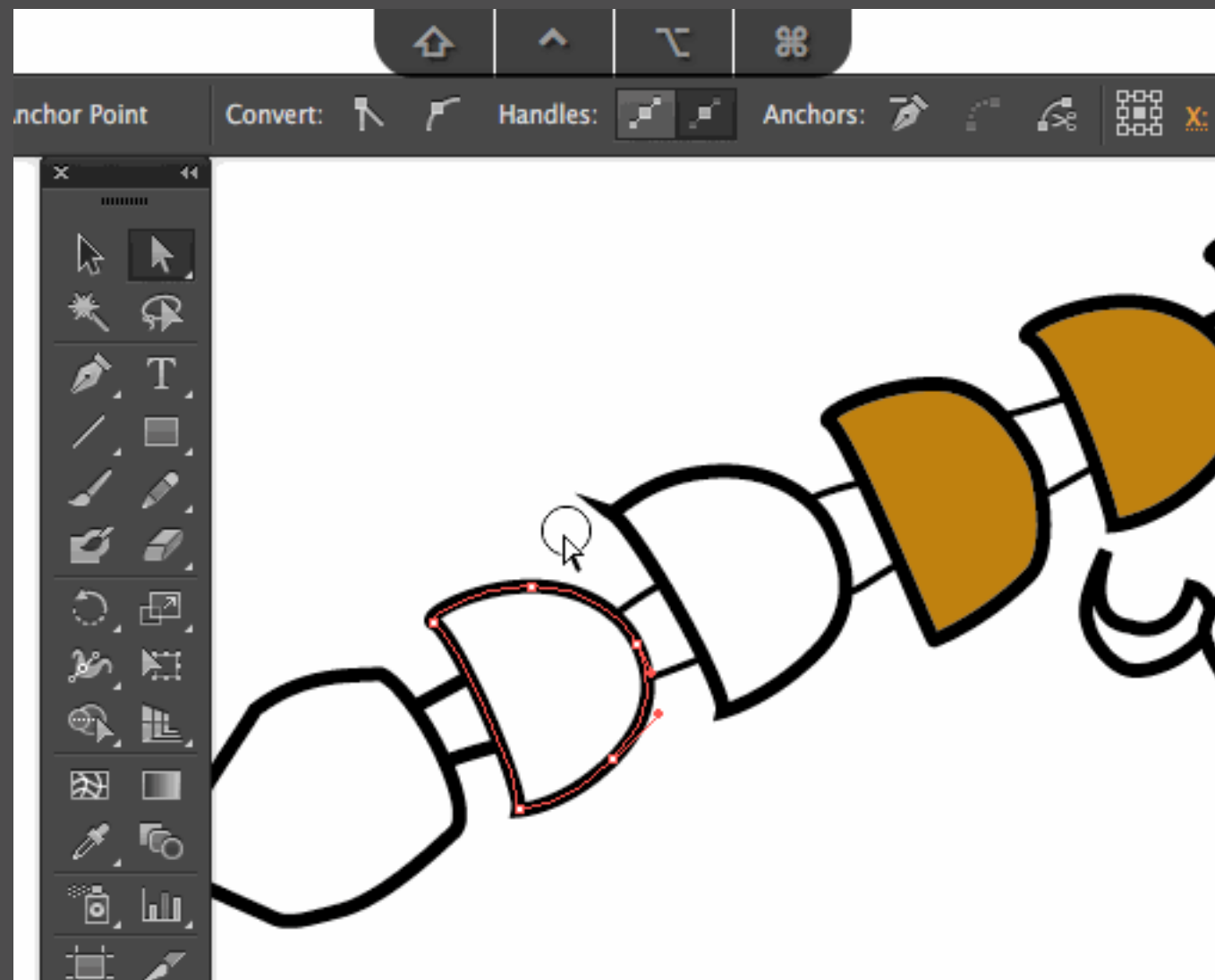




Direct Selection (A)

- Lasso (Q)
- Magic Wand (Y)

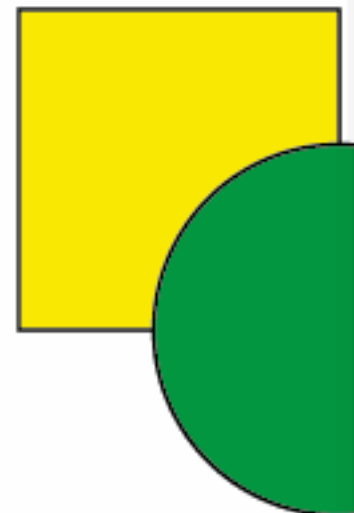
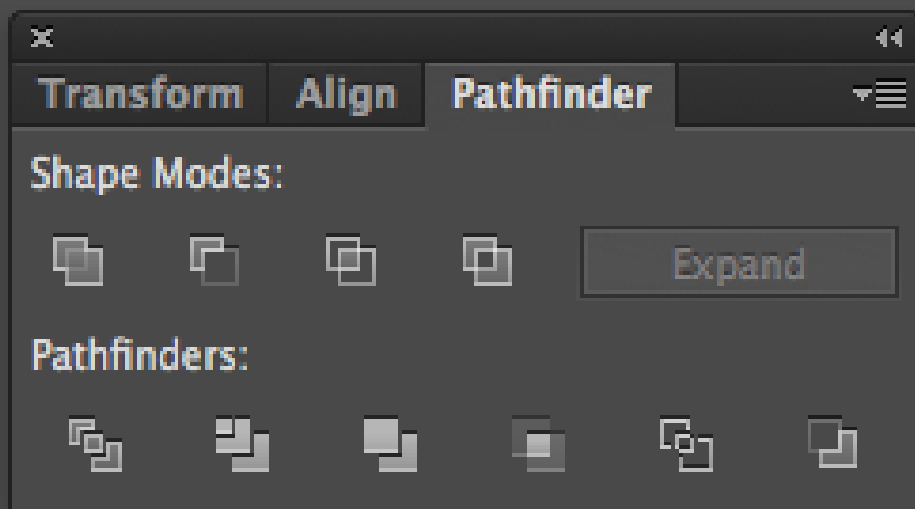
PC: ctrl
Mac: Shift cmd





Pathfinder

- Window > Pathfinder
- Shift ↑ + Cmd ⌘ + F9
- Remember the arrangement



Zoom Out	⌘ -
Fit Artboard in Window	⌘ 0
Fit All in Window	⇧ ⌘ 0
Actual Size	⌘ 1
Hide Edges	⌘ H
Hide Artboards	⇧ ⌘ H
Show Print Tiling	
Show Slices	
Lock Slices	
Hide Template	⇧ ⌘ W
Rulers	▶
Hide Bounding Box	⇧ ⌘ B
Show Transparency Grid	⇧ ⌘ D
Hide Text Threads	⇧ ⌘ Y
Hide Gradient Annotator	⇧ ⌘ G
Show Live Paint Gaps	
Guides	▶
✓ Smart Guides	⌘ U



Pencil (N)



PC:

Mac:

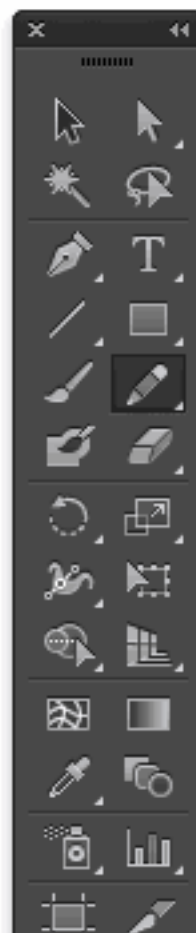
Shift

ctrl

alt

ctrl

cmd





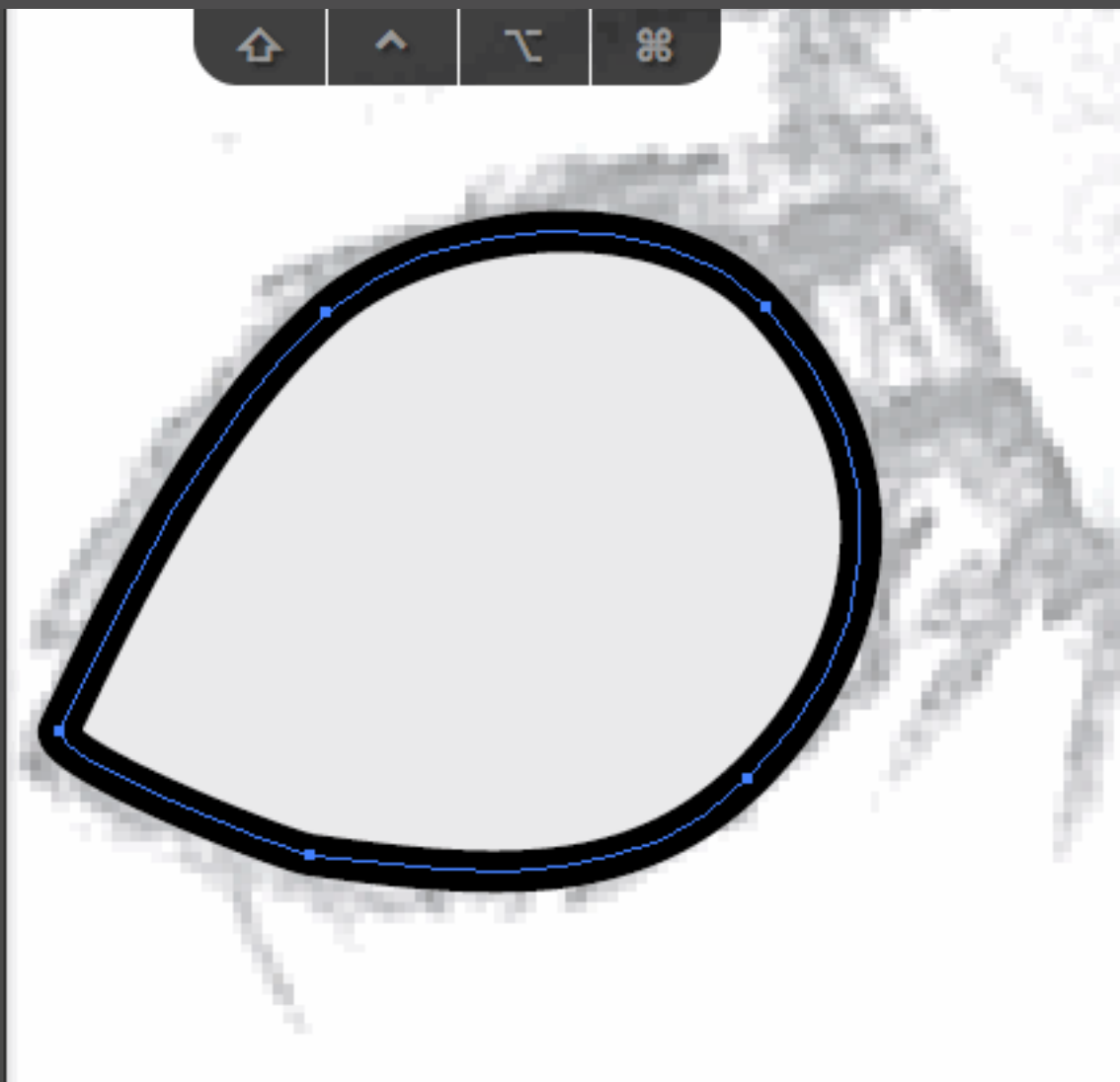
Eraser (Shift+E)



- ✓ Eraser Tool (Shift+E)
- ✂ Scissors Tool (C)
- 🔪 Knife

- Scissor (C)
- Knife

PC: ctrl
Mac: Shift ctrl alt cmd





Tools

- Paint

- Blend (W)
- Width (Shift+W)
- Paintbrush (B)
- Eyedropper (I)



Blend tool (W)

- Stroke settings
- Eyedropper (I)



Stroke: 1 pt

Uniform

Basic

Opacity: 100%

Style:



PC:

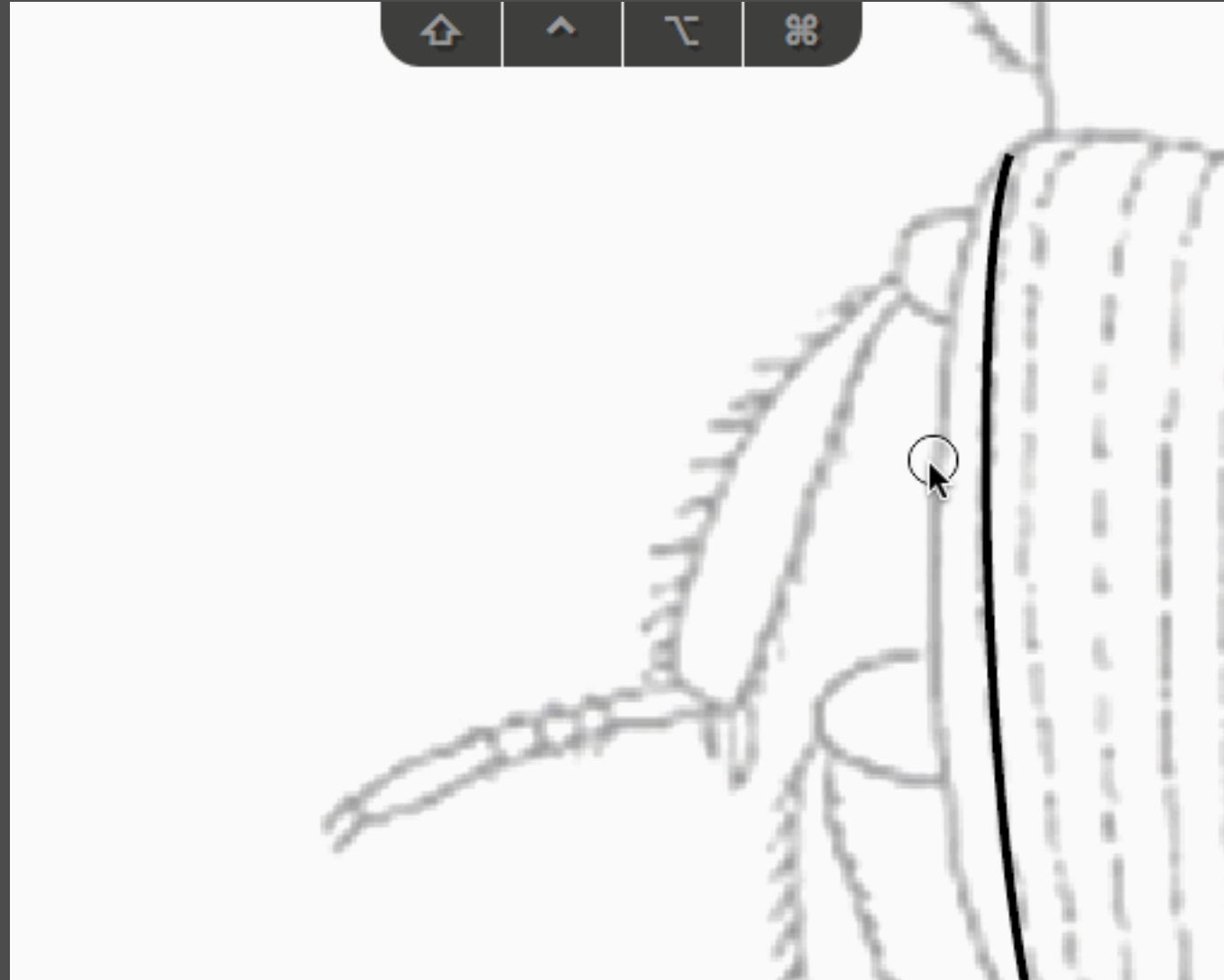
Mac: Shift

ctrl

alt

ctrl

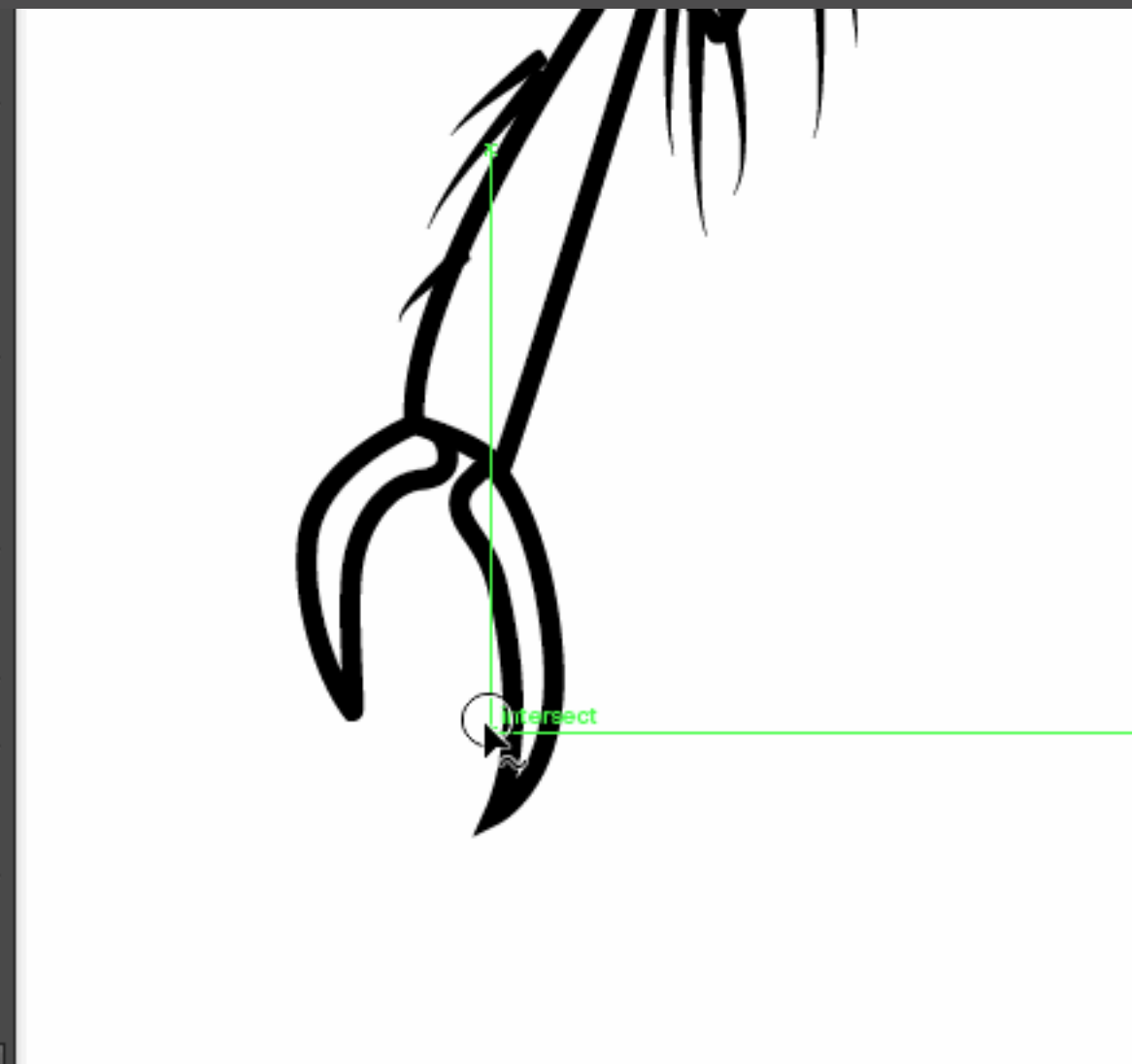
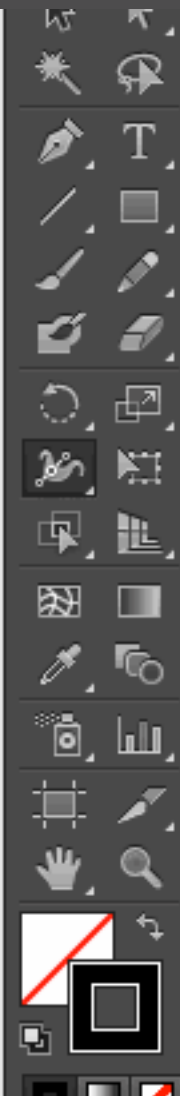
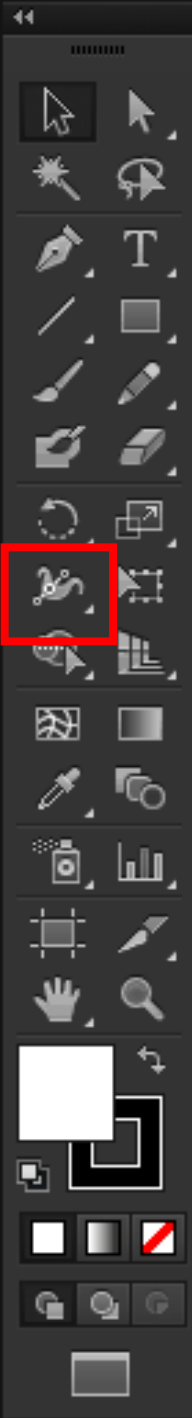
cmd





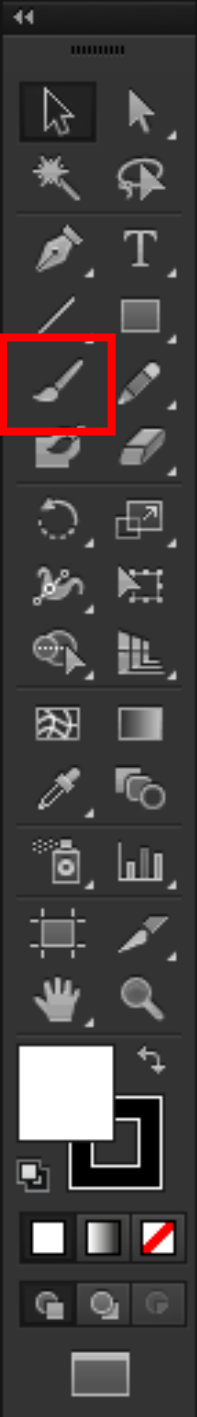
Width (Shift+W)

•

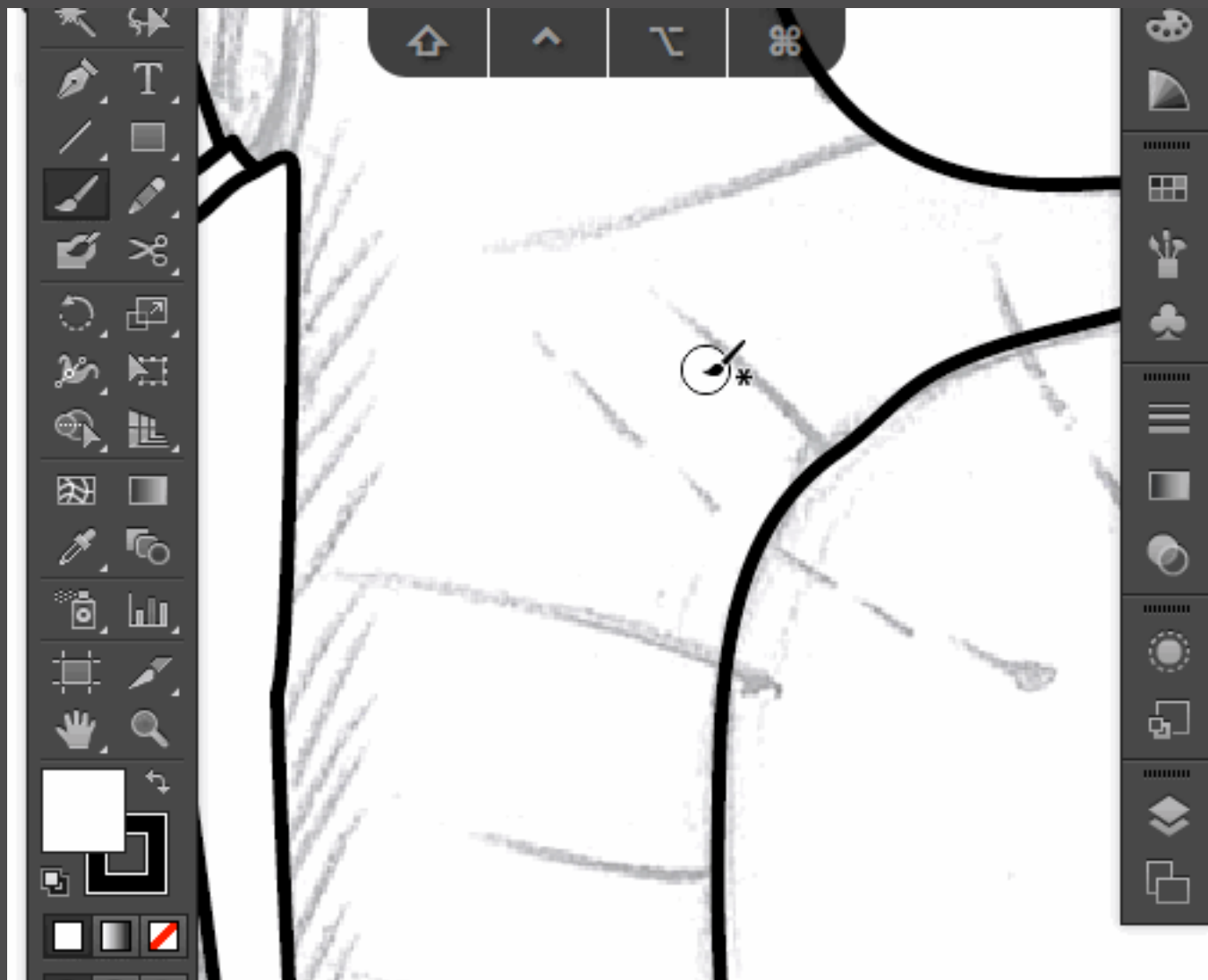




Paintbrush (B)



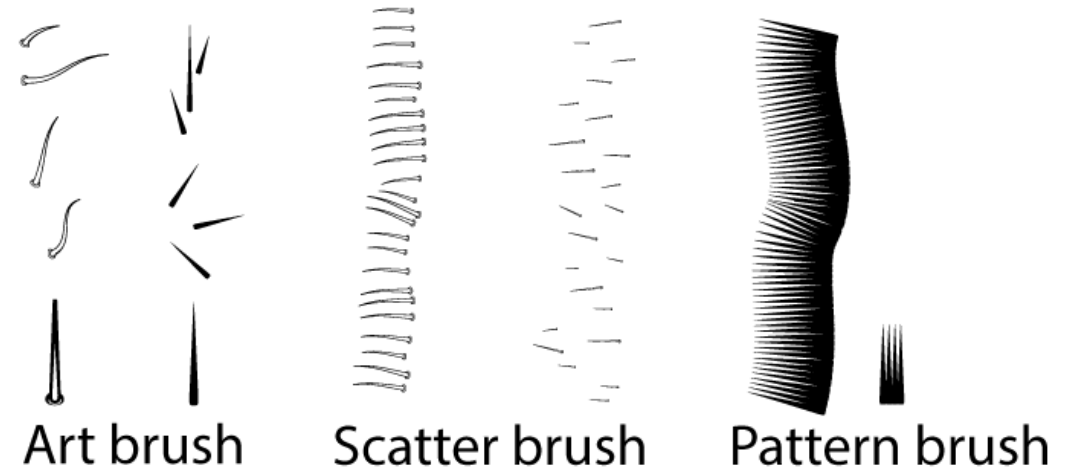
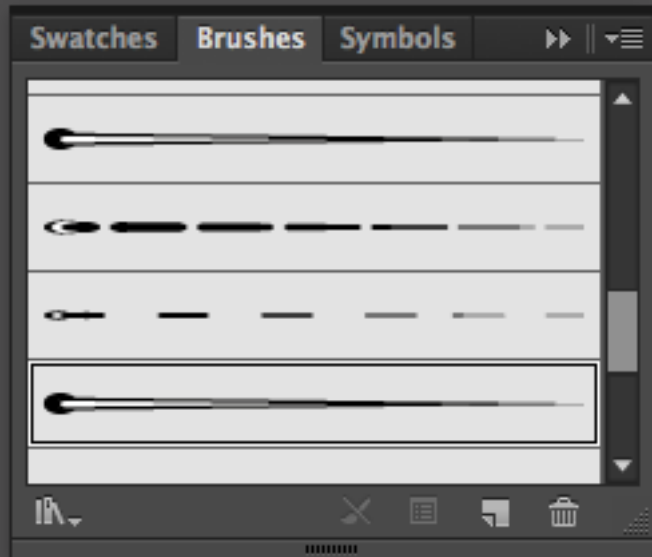
PC: ctrl
Mac: Shift ctrl alt cmd





Brushes

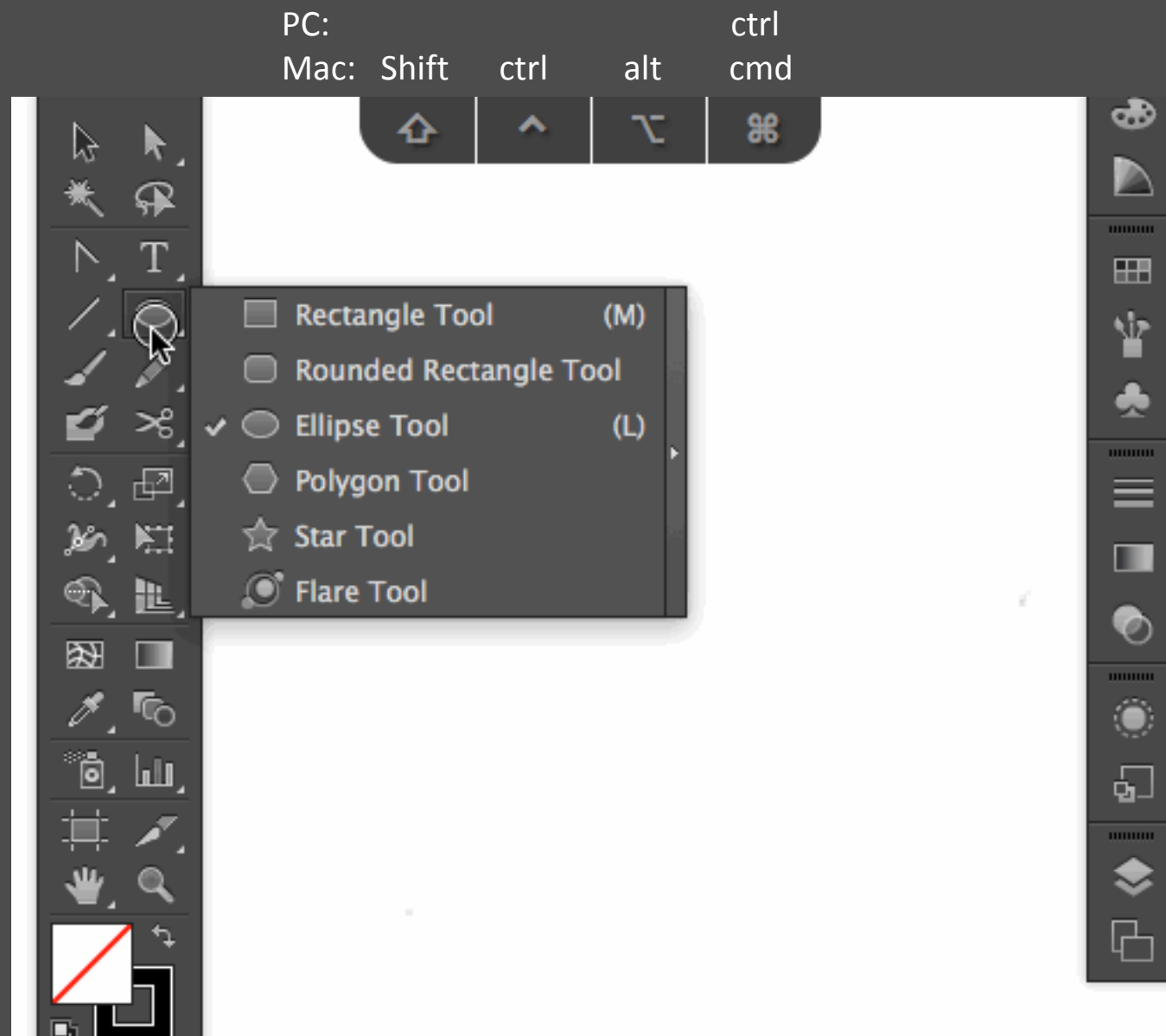
- Make custom brushes
- Setae, spines, punctures e.t.c.





Brushes

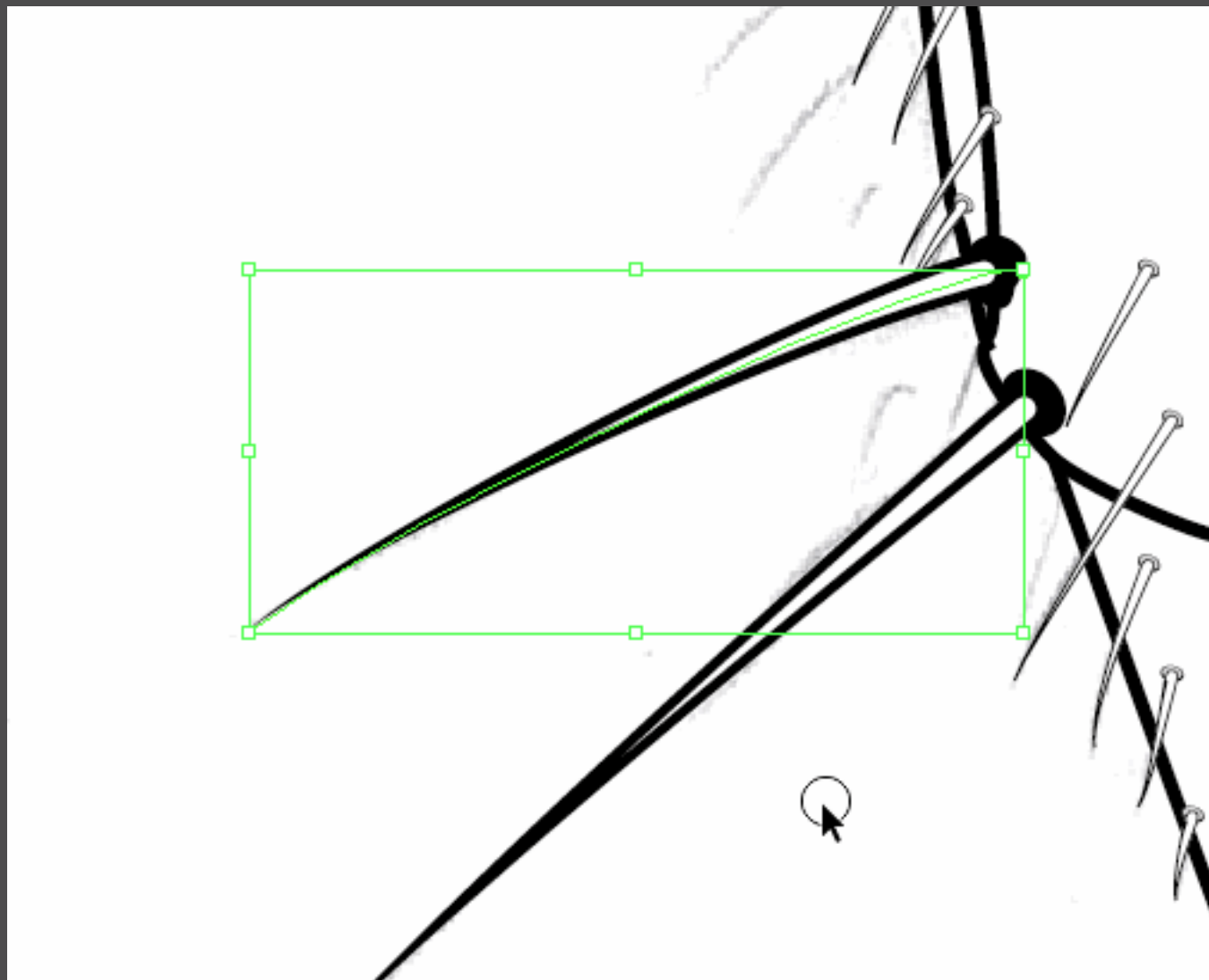
- Make custom brushes
- Setae, spines, punctures e.t.c.





Expand

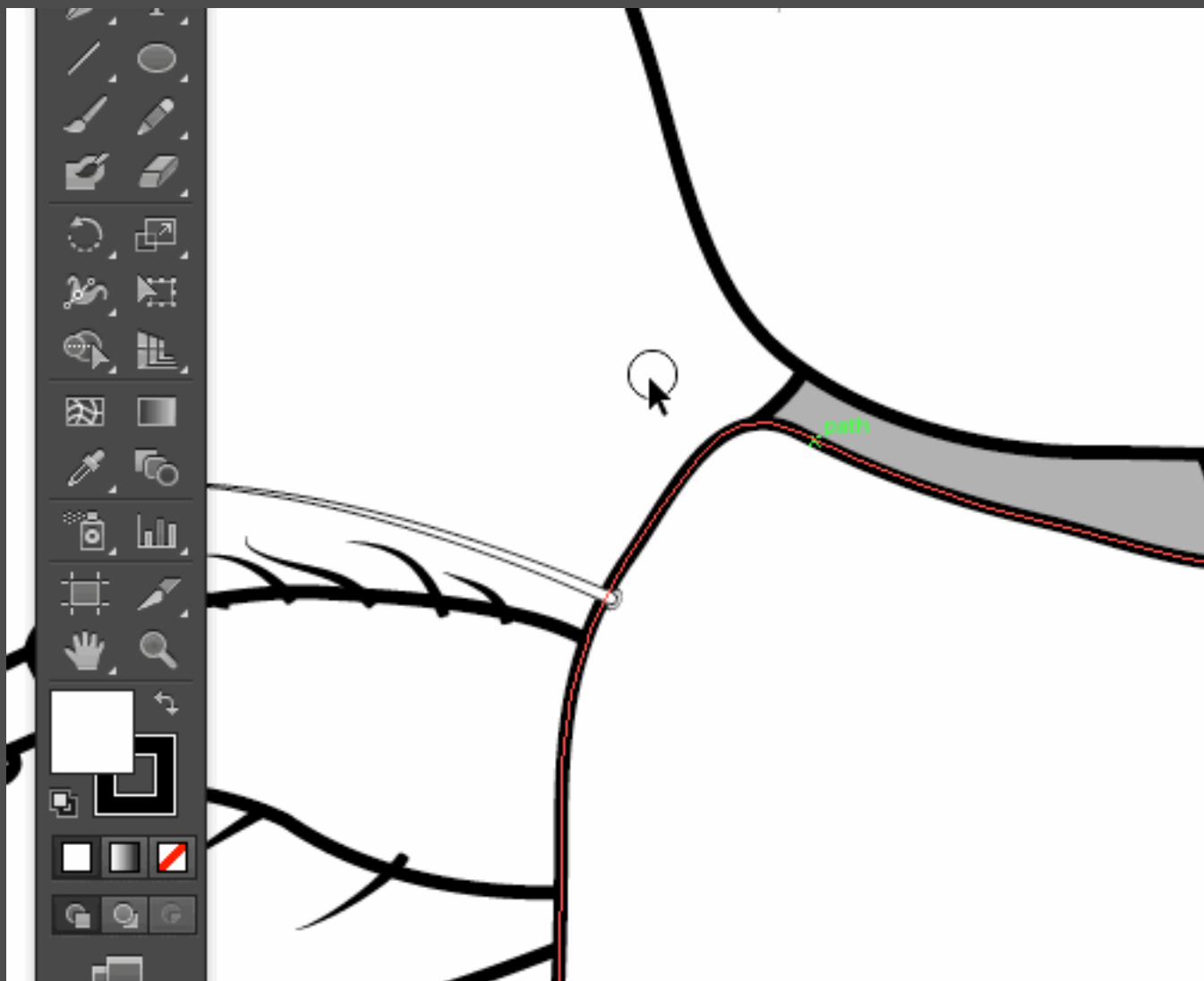
- Object > Expand appearance





Patterns

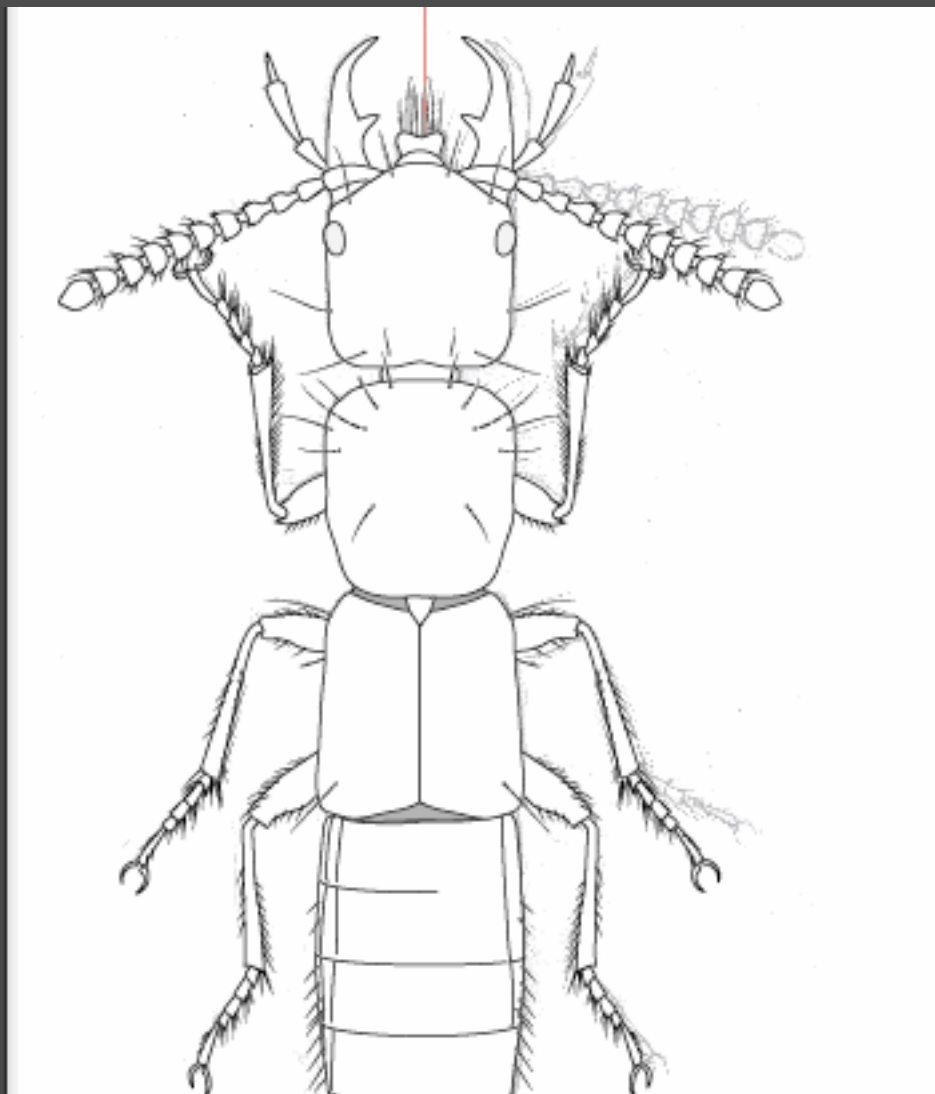
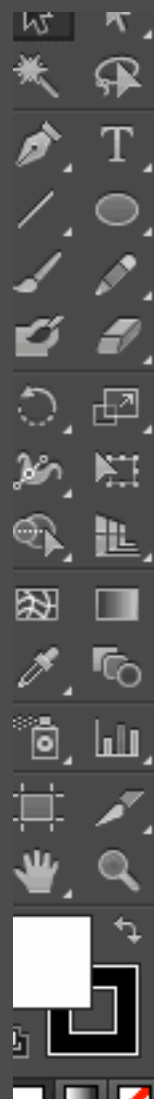
- Custom patterns
- Object > pattern
- Press ESC to finish
- Found in Swatches





Artboard

- Shift + O
- File > export



Questions

Get the software

Adobe: <http://www.adobe.com/uk/downloads.html>.

The trial period is 7 days, and starts counting from the day you install.

Alternatives

Photoshop

- GIMP <https://www.gimp.org/>

Illustrator

- Inkscape <https://inkscape.org/en/>

InDesign

- Scribus <https://www.scribus.net/>

Examples for the workshop

<https://drive.google.com/drive/folders/0B2SSHvZcGdSkaU1BZWf6YVZwZ3M?usp=sharing>

- Habitus illustration



- Structure detail



- Tree enhancing



- Picture clean-up



- Fossil reconstruction



Resources

- Illustration guide:
- <http://www.nhm.ku.edu/illustration/index.html> Tree enhancing
- Scale bar and measurements (ImageJ):
- <http://www.solodovnikovlab.com/resources#Measuring>
- Manual to Photoshop:
- <https://helpx.adobe.com/photoshop/user-guide.html>
- Manual to Illustrator:
- <https://helpx.adobe.com/illustrator/user-guide.html>
- Manual to Indesign:
- <https://helpx.adobe.com/indesign/user-guide.html>

